THE IRON TRADE REVIEW

Volume XLIV CLEVELAND, JANUARY 28, 1909 Number 4

DULL WEEK

IN NEARLY ALL IRON AND STEEL PRODUCTS.

Satisfactory Specifications on Rails and Bars—More Price Cutting in Some Lines.

Specifications on some finished material contracts, especially steel rails and bars, have increased, giving more activity to the mills, but for the most part the market is very dull. Reports of concessions on plates, sheets and structural material are more frequently heard. The Carnegie Steel Co. has started the first of its 12 new open-hearth furnaces at the Ohio works, Youngstown, and will now be able to roll open-hearth rails. The Illinois Steel Co. will start its No. 1 mill at South Chicago in a few days, after a year's idleness. The rail mill at Gary, on which a trial run was recently made, will begin rolling next month. The enlarged wire plant of the Youngstown Sheet & Tube Co. will soon be in full operation.

Pig Iron Quiet

The pig iron market is dull in all parts of the country, and while furnaces are as a rule adhering pretty well to quotations which have prevailed for some time, middlemen are selling at lower prices. Some foundries are requesting that shipments be deferred, and on the whole the outlook is not encouraging. An inquiry for 15,000 tons of basic from a company in western Pennsylvania did not result in an order being placed. Stocks of pig iron in the east have increased during the month, but are understood not to amount to much more than an average of 1,000 tons per stack.

Structural Material

Competition on structural material is very keen, and concessions on prices are being more freely met. The only building requiring as much as 1,000 tons contracted for during the week was the Wick building at Youngstown, for which the Cambria Steel Co. will furnish the steel. The track elevation project of the Pennsylvania railroad at Philadelphia will require about 10,000 tons, and 5,000 tons will be needed for a copper smelter in Utah. Building projects which it is expected will soon be contracted for include 6,000 tons at San Francisco, 3,000 tons at Kansas City, and 2,000 tons at Seattle.

Rails, Plates and Sheets

The principal new rail business booked for the week was 6,000 tons at Chicago and a like tonnage at Cleveland. The Rock Island has sent in specifications on the contract made in 1908, amounting to 18,000 tons. Mills are receiving good specifications on recent plate contracts from steel car companies. The mills in the Chicago district report a very encouraging increase in specifications on bars. In sheets conditions are not satisfactory, and lower prices are common.

Coke and Old Material

The production of coke continues to exceed the demand, and some very low prices for prompt delivery are being made. Several coke plants are expected to stop operations within a few days, while others are operating only five days per week. The old material market is very dull and there is increased weakness in the east and central west.

Vanadium Steel Order.—What is said to be the largest order for vanadium steel ever placed in this country has recently been given by the Ford Motor Co., of Detroit, Mich., to the United Steel Co., Canton, O. This order calls for 2,100 tons in all, consisting of type "D" vanadium steel for springs, type "N" vanadium case hardening steel, and type "A" vanadium steel for axles, forge parts, gears, etc. The new Ford car will be built throughout of vanadium steel.

PIG IRON COSTS.

Summary of Brief Filed by J. G. Butler Jr. With Tariff Committee.

A brief showing the comparative costs of manufacturing pig iron in various sections of the United States, England and Germany, has been filed with the ways and means committee of congress by Joseph G. Butler Jr., representing a large percentage of independent or merchant furnaces of the United States. The brief has special reference to the tariff on items covered by paragraph 122 of the Dingley act.

After pointing out that the maintenance of the present tariff on steel and iron scrap is of the greatest importance to pig iron producers as well as railway companies, agricultural machinery manufacturers and others, Mr. Butler calls attention to the fact that the merchant furnaces pay freight on four tons of materials assembled to produce each ton of pig iron, aside from the freight on the outgoing product. Casting in sand or chilled molds restricts the size and capacity of merchant furnaces, and this increases tonnage costs. As to the scope of the tariff to be protective, Mr. Butler says: "The duty should be protective under the most adverse circumstances, such as the practice of dumping foreign pig iron here, the payment of export bonuses, special through freights to seaboard and interior domestic points, these products being frequently carried as ballast. * * * In the last analysis, practically all the cost of the materials for making pig iron—iron ore, flux stone, coke, coal, sand, etc.—is for labor exclusive of mining royalties or interest and taxes. To sum up this part of the brief, without protection iron in pigs can not be made and sold at a profit in this country."

Mr. Butler submits cost sheets from various manufacturers located in the principal pig iron producing districts of the country, some of them supported by affidavits. The costs enumerated cover operating in the year 1907. The sheets are attached to the brief as exhibits. For convenience, he summarizes these costs, together

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THE WEEK IN IRON CENTERS

PITTSBURG.

Low Prices Made by Middlemen—Market Very Quiet.

Office of THE IRON TRADE REVIEW,
510 Park Bldg., Jan. 26.

The past week in the iron and steel market has been one of general quietness. Specifications against running contracts continue to come to the mills in a fair volume, but new business is not heavy and engagements for any extended period into the future are being avoided by the buying public.

There is a disposition among the jobbing trade to carry no more stocks than are absolutely necessary and this is being made possible by the ready deliveries obtainable from the mills with their present moderate operations. The general explanation offered by iron and steel makers for the lack of forward motion in the market is the prevailing uncertainty as to what may be expected in the way of revision of the tariff.

In some products, a continued shading of official prices by certain interests is having a tendency to disturb conditions. This cutting of quotations in several lines has become quite pronounced, owing to the limited volume of business being offered. The very low prices at which some erected steel work is being accepted, is regarded as significant of the underselling of the official schedule on shapes by some mills. The pig iron situation is also productive of low prices being made by middlemen who had obtained their metal at advantageous terms before the recent advance in the market.

The Carnegie Steel Co. this week started the first of its 12 new open-hearth furnaces at its Ohio works, Youngstown. This event is of considerable market importance since it signifies that the company is now equipped with the necessary facilities for rolling open-hearth rails at a plant providing its own steel by this process. Formerly the Carnegie company was not in a position to roll such rails advantageously as its steel-making equipment at its rail plants, Edgar Thomson and Ohio, had been of the Bessemer nature. The girder rail mill of the Lorain works of the National Tube Co., will also be supplied shortly with open-hearth steel from six new furnaces which are now approaching completion.

Pig Iron.—Low prices named by middlemen have been the principal developments of an otherwise dull week in pig iron. These quotations have been made on very small lots in competition with furnace interests and have invariably taken the business, as the latter have not shown a willingness to lower their ideas of prices. The general market is the least active for many weeks. Melters are apparently comfortably filled for for their first quarter requirements and are awaiting developments before manifesting any interest in deliveries beyond that time.

A steel casting interest, through a middleman, took 100 tons of Bessemer at $16 valley or $16.90 delivered. Another smaller lot of resale iron went at the same price. The furnaces are holding around the quoted minimum of $16.50 valley. The Midvale Steel Co. inquiry for 2,000 tons is believed to have been placed in Philadelphia territory. Malleable is quoted from $15.50 to $15.75 valley.

Makers of basic are asking $15.75 valley, but the price may be shaded and $15.50 valley is being done by middlemen. The Pittsburg Steel Co., to which the Canal Dover stack is furnishing 6,000 tons of basic monthly, is regularly consuming much more than this tonnage in its operations. This fact has given rise to the report that the company has closed another long-term contract, but the furnaces mentioned do not confirm such a rumor.

The market on No. 2 foundry is around $15.50 valley. A machine company in this territory took 300 tons for several months delivery at a price reported to be considerably under $15.50 valley. This sale is also said to have been made by a middleman.

The southern market is holding well at $13 Birmingham. The resale iron offered in Cincinnati territory at $12.75 is reported to have had little effect upon the strength of the market. On prompt and first quarter shipment on northern iron, we quote as follows:

Bessemer, valley	$16.50 to 16.75
Bessemer, Pittsburg	17.40 to 17.65
No. 1 foundry, Pittsburg	16.65 to 16.90
No. 2 foundry, Pittsburg	16.40 to 16.65
Gray forge, Pittsburg	15.40 to 15.90
Basic, valley	15.75 to 16.00
Basic, Pittsburg	16.65 to 16.90

Ferro-Alloys.—The inquiry in this market is very light, and there is a tendency toward lower prices. Some business is under negotiation in ferro-silicon. We quote 80 per cent ferro-manganese at $44 to $45 seaboard, with a freight rate of $1.95 to Pittsburg.

Imported 50 per cent ferro-silicon is quoted at $62.50 to $63 Pittsburg on forward deliveries; domestic 12 per cent, $27; 11 per cent, $26; 10 per cent, $25 Pittsburg.

Plates.—Figures were taken Monday by the Pennsylvania railroad on 2,600 steel cars for its lines west. It will probably be several weeks before the award is made. The Chesapeake & Ohio is also reported to be figuring on 500 steel freight cars. Prospects for many additional boat orders for 1909 delivery are not promising, and the interest of the ship building companies is turning toward the 1910 season. The mills are receiving good specifications from the steel car companies on the car orders recently placed, and operations are being maintained on about the same basis as in the past. Considerable shading of plate prices is being done by some independents. We quote officially as follows:

Tank plate, ¼-inch thick, 6¼ to 100 inches, 1.60c f. o. b. mill Pittsburg Extras are as follows per 100 pounds: Boiler and flange steel plates, 0.10c; A. B. M. A. and ordinary firebox steel plates, 0.20c; still bottom steel, 0.30c; marine steel, 0.40c; locomotive firebox steel, 0.50c; all sketches, excepting straight taper plates varying not more than 4 inches in width at ends, narrowest end not being less than 36 inches, 0.10c; circles, 0.20c. Plates in widths over 100 inches up to 110 inches, 0.05c; over 110 inches up to 115 inches, 0.10c; over 115 inches up to 120 inches, 0.15c; over 120 inches up to 125 inches, 0.25c; over 125 inches up to 130 inches, 0.50c; over 130 inches, 1c Gages under ½-inch to and including 3/16-inch plate on thin edges, 0.10c; under 3/16 to and including No. 8, 0.15c; under No. 8 and including No. 9, 0.25c. Five cents extra for less than carloads. Terms, net cash in 30 days.

Sheets.—Cutting of sheet prices by certain independent interests is becoming a greater factor in the market. Much of the current business is going at shaded quotations. The inquiry shows a moderate increase, and specifications are fair. The independent mills generally are running close to full capacity. The leading producer

this week has active 93 mills or 50 per cent of capacity, compared with 101 mills or 54 per cent the preceding week. We quote officially as follows:

Blue annealed sheets, No. 10 and heavier, 1.80c; Nos. 11 and 12, 1.85c; Nos. 13 and 14, 1.90c; Nos. 15 and 16, 2c; box annealed, Nos. 17 to 21, 2.25c; Nos. 22 to 24, 2.30c; Nos. 25 and 26, 2.35c; No. 27, 2.40c; No. 28, 2.40c; No. 29, 2.60c; No. 30, 2.70c; galvanized sheets, Nos. 10 and 11, 2.45c; Nos. 12 and 14, 2.55c; Nos. 15 and 16, 2.65c; Nos. 17 and 21, 2.80c; Nos. 22 and 24, 2.95c; Nos. 25 and 26, 3.15c; No. 27, 3.35c; No. 28, 3.55c; No. 29, 3.70c; No. 30, 2.95c; corrugated roofing, $1.75 per square for No. 28 painted, 2½-inch corrugation, and $3.10 per square on galvanized roofing, 2½-inch corrugation, No. 28.

Jobbers are allowed $1 a ton from these prices.

Tin Plate.—The volume of specifications against the contracts of the western fish packers, the enameled ware makers and the early fruit canners continues quite heavy, and is steadily increasing as the first quarter advances. The American Sheet & Tin Plate Co. has going this week 164 mills, or 68 per cent of capacity, compared with 160 mills, or 66 per cent, the previous week. We quote official prices as follows:

Coke tin plate, 100-pound basis, 14 x 20, $3.70 f. o. b. mill Pittsburg district. Terms, 30 days, less 2 per cent for cash in 10 days.

Rails and Track Material.—Specifications against rail contracts are being given in better volume, and the rail mills of the Carnegie Steel Co. at the Edgar Thomson works, though still gaited, are turning out a larger tonnage. Orders are being received against the Pennsylvania, Chesapeake & Ohio, and other railroad contracts and there is a steady consumption by the frog and switch manufacturers. No formal contract for the 80,000 tons required by the New York Central lines, including about 10,000 tons for the Pittsburg & Lake Erie railroad, has been received by the local rail maker. Sales of light rails in the week reached 1,000 tons. The mills rolling light rails from billets continue to meet the prices on certain sections quoted by the re-rollers. On present specifications on Bessemer rails we quote as follows, the base price for open-hearth rails being $30 mill:

Fifty-pound and heavier, 500-ton lots and over, $28; carloads and less than 500 tons, $30; less than carload lots, $32; 8-pound, $32; 12-pound, $29; 16-pound, $27; 20-pound, $26; 25 to 45-pound, $25; angle splice bars for standard sections, $1.65; standard spikes, $1.70 to $1.80 Pittsburg; hand spikes, $1.80 to $1.90 Pittsburg.

Steel.—A sale of 3,000 tons of billets for immediate shipment at full prices is reported. While there is some billet business in odd lots now going, the leading consumers are all under contract and are specifying quite well against these engagements. The sheet bar demand is greater, as many of the independent sheet makers are enjoying favorable operations.

Bessemer and open-hearth billets, base sizes, are quoted at $25 Pittsburg, and forging billets at $27 Pittsburg, subject to the division of the freight charge over $1 and not exceeding $2, and sheet and tin bars at $27.50 Pittsburg, valley and Wheeling territory, and $27 Pittsburg for delivery to other points.

Hoops and Bands.—Owing to a lack of confidence in the future by reason of the prevailing temperance agitation, the coopers are piling stocks much below normal. The demand for hoops is suffering accordingly. There is little new contracting. We quote official prices as follows:

Hoops in carload lots, 1.80c; in less than carload lots, 1.90c; bands, 1.40c, base half extras as per standard steel.

Merchant Bars.—With some large makers of steel bars, specifications in January will show a slight increase over December when the holiday interruptions disturbed an otherwise favorable month. New business is not heavy. Bar iron is fairly strong at 1.50c Pittsburg in Pittsburg territory, and the western market is reasonably firm at 1.50c Chicago. The eastern situation is more irregular, and some of the mills of that section are shading prices. We quote officially as follows:

Common iron bars, 1.50c Pittsburg in carload lots and over; 1.55c in less than carloads, 1.32c to 1.35c base Pittsburg, plus freight to point of shipment on western deliveries; Bessemer and open-hearth steel bars, 1.40c; plow and cultivator, 1.40c; channels, angles, zees, tees, under 3-inch 1.50c, all f. o. b. Pittsburg. The following differentials are maintained on steel: Less than 2,000 pounds, 0.10c advance; less than 1,000 pounds of a size, 0.30c advance. Cold rolled and ground shafting, 57 per cent in carloads, and 52 per cent in less than carloads, delivered in base territory; open-hearth spring steel, 2.25c to 2.50c; sleigh shoe flats, 1.60c to 1.65c; smooth finished machinery steel, 1.90c to 2c; toe calk, 2.10c to 2.15c. Planished and machine straightened tire steel is 1.60c base. Iron finished tire under 1½ by 1½ inches, 1.55c, plus ½ extra on tire card; iron finished tire, 1½ by ½ and over, 1.40c, plus ½ extra on the steel bar card.

On cold rolled strip steel, width 1½ inches and wider, and 0.100 inch and thicker, we quote base prices for 100 pounds, $3.35 on hard, and $3.60 on soft.

Structural Material.—Inquiries on new construction projects are increasing, but the former condition of sharp competition and cut prices on fabricated and erected work still prevails. Occasionally some interests are withdrawing from competition because of the unsatisfactory quotations to be met. There appears to be well grounded authority for the report that some of the independent mills are shading official shape prices, since some contracts being taken on erected work would show a loss at the 1.60c basis. The Nicola Building Co., Pittsburg, which has the general contract, has taken bids on 1,400 tons for a grandstand at the new park of the Pittsburg baseball club of the National League. The Cambria Steel Co. has taken 1,000 tons for the new Wick building at Youngstown, for which Burnham & Co., of Chicago, are the architects. Thompson & Starrett, New York, have taken the general contract for the Jenkins building, Pittsburg, but the steel, 400 tons, has not yet been placed. Bids are expected to be asked soon on the new West Penn hospital of Pittsburg, 1,200 tons, and for a three-span steel bridge across the Allegheny river at Oil City, Pa., which will require about 2,000 tons. We quote officially as follows:

Beams and channels, 15-inch and under, 1.60c; over 15 inches, 1.70c; zees, 1.60c; tees, 1.65c; angles from 3 to 6 inches, 1.60c; over 6 inches, 1.70c; universal and sheared plates, 6¼ inches and wider, 1.60c base.

Merchant Pipe.—The trade from the jobbers of merchant pipe the past week showed some increase, but there is a disposition to avoid stocks as much as possible because of the prompt shipments that may be obtained on orders to the mills. The demand for merchant pipe is consistently active. The prospects before the market in merchant pipe, line pipe and oil and gas field goods are reported as excellent. We quote the following official base discounts subject to five off to jobbers, while a few of the very large jobbers with mill connections are given an additional one point off:

	—Steel—		—Iron—	
	Black.	Galv.	Black.	Galv.
¼ to 6 inches....	75	65	73	63

Boiler Tubes.—The National Tube Co., having Jan. 1 abandoned the manufacture of iron boiler tubes to devote itself exclusively to the making of Spellerized steel tubes, is now producing only sufficient iron tubes to complete unfilled contracts. When these obligations are met, the company will cease to be a maker of iron tubes, having as such been one of the leading manufacturers of this product. There is little activity in the tube market, and prices are more uniform. We quote the following official discounts to the general trade on base sizes:

BOILER TUBES.

	Iron.	Steel.
2¼ to 5 inches.....	52	65

Wire Products.—Although this season is normally a quiet one in wire products, the market shows more than the usual dullness, and conditions are less active than they have been for several months. This applies both to the jobbing and manufacturing trade. It is expected that the spring season will show some improvement. The enlarged wire plant of the Youngstown Sheet & Tube Co., at Struthers, O., is expected to be in full operation about Feb. 15. It is only partially active at present. We quote official prices as follows:

Wire nails, jobbers' carload lots, $1.95; retailers' carload lots, $2; painted barb wire, jobbers' carload lots, $2.10; retailers' carload lots, $2.15, with 30c for galvanizing; plain wire to jobbers in carloads, 1.80c and to retailers in carloads, 1.85c.

Wire Rods.—Specifications are being received against present contracts, but there is little interest being shown by consumers in new buying. We quote $33 Pittsburg on Bessemer and $34 Pittsburg on open-hearth rods.

Coke.—Some operators continue to make efforts to curtail the production of furnace coke in the Connellsvile regions, because of the weak spot market prevailing. The one day shut down of ovens tried by some interests several weeks ago had little effect upon the output and a number of companies are now banking their plants for two days a week. Several operations are expected to go out entirely about Feb. 1. There is still considerable coke on track and shopping in small lots is bringing out some low prices, but for large quantities the market has a firmer aspect. There is practically no contracting for extended delivery in furnace coke, and only a few extended orders are being placed in foundry grades. Shipments on foundry coke contracts are less active. There is plenty of water in the regions and operations are no longer suffering from this cause. We quote the spot market on high grade furnace coke at from $1.60 to $1.70 ovens, and on contract from $1.90 to $2 ovens. On first class Connellsville foundry coke for immediate shipment the price range is from $2 to $2.25 ovens, and on contract from $2.25 to $2.50 ovens. The *Courier's* figures for the week ending Jan. 16 show 23,478 active ovens, with an output of 262,440 tons, which is only a slight decrease from the preceding week when the active capacity was 23,653 ovens and the production 265,158 tons.

Old Material.—The market is very dull and displays more signs of weakness. Middlemen are offering more tonnage and are apparently willing to dispose of some of these accumulations at cost. The embargo at the plant of the Allegheny Steel Co. continues and turnings are lower. Bundled sheet scrap is ruling down after having been bid up recently by dealers. The Pittsburg Steel Co., which has been one of the heaviest consumers of heavy steel in this territory since it became a maker of its own steel last summer, is now operating six of its open-hearth furnaces and is regularly melting a large tonnage of scrap against which it is reported to be well covered. We quote delivered in the Pittsburg district as follows:

Heavy melting scrap, $16 to $16.50; re-rolling rails, $17 to $17.50; bundled sheet scrap, $13.50 to $14; iron axles, $23.50 to $24; old iron rails, $18.50 to $19; No. 1 wrought scrap, $17.25 to $17.50; old car wheels, $16.75 to $17.25; low phosphorus, $18.50 to $19; machine shop turnings, $12 to $12.50; cast borings, $10 to $10.50; No. 1 cast scrap, $14.75 to $15.25; malleable, $15 to $15.50.

CHICAGO.

Very Little Business and Some Tendency Toward Weakness.

Office of THE IRON TRADE REVIEW,
1328 Monadnock Block, Jan. 26.

In the parlance of the street, there is "little or nothing doing" here in iron or steel. A few bright spots illuminate the horizon, but in the main, the market presents the appearance of suspended animation. Agricultural materials, which have always been good, show a disposition to improve. Specifications for standard rails also are better than they were; but these two statements comprise all that can be said of an encouraging nature. The agricultural demand is not only confined to wire products, but embraces iron and steel bars, boiler tubes and small sizes of merchant pipe. The specifications for these products are better than they have been in two months, one large mill admitting they were 100 per cent in excess of the tonnage of any week in this period. The Illinois Steel Co. will start its No. 1 rail mill at South Chicago early in February, the first time this mill has been in operation this year; and because of the pressing nature of some of the rail specifications which are to be rolled at Gary, it has also been decided to start the mill at that plant next month. Fifty thousand tons have to be rolled at Gary at the earliest date possible, and with this accumulation to start on, it is believed the mill can be kept going continuously afterwards. New rail business booked this week aggregates only 6,225 tons, but there are approximately 100,000 tons pending. Light rails are very quiet and prices can be shaded from $1 to $2 a ton. There is very little doing either in sheets or plates, and the established prices of both can be shaded without difficulty. There is also sharp competition in riveted steel, and some low prices are being made. Scrap continues its downward course, each transaction being a law unto itself in the matter of price. Pig iron remains stationary, no material change being noted from conditions reported a week ago.

Pig Iron.—There is nothing of interest to report regarding local trading. An extremely quiet condition prevails, with the market inclined to increased pessimism. Purchases are invariably inspired by pressing necessities; and because of the overbought condition of most foundrymen in this district, or, more correctly, because of the small volume of business the majority of them are doing, few melters find themselves pressed for iron. One large seller stated that it had not sold a carload of iron in a week, another boasted selling 200 tons, and a third house did the enormous business of 1,000 tons. So indifferent toward their future requirements are foundrymen that it is doubtful if a reduction of 25 cents or 50 cents a ton would invite any more tonnage than the present schedules are bringing out, which is possibly the reason why furnaces decline to make any change. Considerable is heard in this market of resale iron, but so far as this territory is concerned, only one specific instance has developed. This

was an offer of 1,000 tons of eastern iron at a slight concession below the ruling price, but it did not prove attractive and was withdrawn. None of the leading furnaces is shading its prices, but it is possible to divert iron en route, northern or southern, at 25 cents a ton below current values. A considerable tonnage, due on contracts, is being held back at the request of melters, many of them malleable founders, and a very disorganized market is feared unless conditions improve in the near future. We quote for Chicago delivery as follows:

Lake Superior charcoal	$19.50
Northern foundry No. 1	17.75 to 18.25
Northern foundry No. 2	17.25 to 17.75
Northern foundry No. 3	16.75 to 17.25
Southern foundry No. 1	17.60 to 18.10
Southern foundry No. 2	17.10 to 17.60
Southern foundry No. 3	16.60 to 17.10
Southern foundry No. 4	16.10 to 16.60
Southern No. 1 soft	17.60 to 18.10
Southern No. 2 soft	17.10 to 17.60
Southern gray forge	15.85 to 16.35
Southern mottled	15.60 to 16.10
Southern silveries, 4 per cent silicon	18.10 to 18.60
Southern silveries, 5 per cent silicon	18.60 to 19.10
Southern silveries, 6 per cent silicon	19.10 to 19.60
Jackson Co. silveries, 6 per cent.	19.90 to 20.40
Jackson Co. silveries, 8 per cent.	20.90 to 21.40
Jackson Co. silveries, 10 per cent	21.90 to 22.40
Malleable Bessemer	17.25 to 17.75
Standard Bessemer	17.90 to 18.40
Alabama basic	17.35 to 17.85

Billets.—Outside of a few odd car lots of forging billets, the week has been featureless. It is noteworthy, however, that prices are well maintained. We quote as follows: 4 x 4-inch rolling billets, $26.50; forging billets, base, $28.50 Chicago.

Merchant Steel.—A most encouraging condition exists in bars of all kinds. All mills report an increase in specifications, in some instances this amounting to 100 per cent over the tonnage received in either of the two weeks preceding. None of the mills in this district is operating to full capacity, however, most of them jogging along at about 75 per cent of their rated output. The sharp improvement of last week, which has been maintained in the opening days of the current week, is taken, however, as a conclusive symptom that the volume of this year's spring trade will be as heavy as in previous years. Bar iron is holding its own well, local mills standing firmly to the 1.50c schedule. Shafting continues weak. We quote as follows:

Bar iron, 1.50c to 1.53c; soft steel bars and bands, 1.58c, half extras; soft steel angles, less than 3 x 3, 1.68c; hoops, 1.98c base, full extras; planished or smooth-finished tire steel, 1.78c; iron finish, up to 1½ x ½-inch, 1.73c base tire card; iron finish, 1½ x ½-inch and larger, 1.58c base steel card; channel for solid rubber tire, ¾ to 1 inch, 2.08c; and 1⅛ inch and larger, 1.98c; smooth-finished machinery steel, 1.83c; flat sleigh shoe, 1.63c; concave and convex sleigh shoe, 1.83c; cutter shoe, 2.95c; toe calk steel, 2.13c; railway spring, 1.93c base steel card; vehicle spring steel, 1.98c base vehicle card; crucible tool steel, 7c to 9c, with higher prices asked on special grades. Quotations on shafting are 56 per cent off the list for carload lots, and 52 per cent off for less than carload lots, carload freight allowed to points in base territory. On iron and steel bars from local stocks, we quote as follows: Bar iron, 1.90c to 2c, full extras; soft steel bars, 1.80c per 100 pounds base, plus half extras; soft steel hoops, 2.30c full extras.

Plates.—A very unsatisfactory condition prevails in plates. Except from the boiler-making trade, which is specifying fairly freely, demand is light. An occasional order is received from the railroads, but generally speaking structural shops, ship yards and car works are consuming little material. This condition of affairs has resulted in some cutting of prices, the shading averaging about $1 a ton. The contract for 1,000 steel underframes made with the Bettendorf Axle Co. for the box cars to be built by the New York Central in its own shops will take about 3,000 tons of the open order which this company has with the Illinois Steel Works. In other respects, it has been a dull week. We quote for Chicago delivery as follows, with the reservation that these prices can be shaded, as noted above, on desirable business:

Plates, ¼-inch and heavier, 6¼ to 100 inches wide, either universal or sheared, 1.78c Chicago. For extras see Pittsburg report. Shippers' prices for shipment from local stocks are as follows: Tank steel, ¼-inch and heavier, up to 72 inches wide, 2c to 2.10c; from 72 inches to 96 inches wide, 2.10c to 2.20c; 3/16-inch up to and including 60 inches wide, 2.10c to 2.15c; 72 inches wide, 2.35c to 2.45c; No. 8, up to 60 inches wide, 2.10c to 2.15c. Flange and head quality, 25c extra.

Sheets.—This is a "spotty" market on sheets. One day there may be a lot of inquiries, followed by two or three days of marked dullness, or vice versa. Consumers who bought under the concessions of a few months ago, and which contracts are now expiring, are shopping around with their wants in the hope of getting still better concessions. This gives a pretense of activity, but it is noticeable that the volume of business actually placed is considerably below what it ought to be to keep the mills even comfortably busy. The open weather of the last two weeks has enabled building operations to be pursued actively, and this has given rise to a brisk demand for galvanized and corrugated material. But in the general manufacturing trade, stampings, and such like, there is not the consumption that is customary for this time of the year. Prices are soft, with a strong belief that they will not strengthen for some time to come. We quote store prices as follows. For mill prices see Pittsburg report:

No. 10, 2.15c to 2.25c; No. 12, 2.20c to 2.30c; No. 14, 2.25c to 2.35c; No. 16, 2.35c to 2.45c; Nos. 18-20, 2.60c to 2.65c; Nos. 22-24, 2.65c to 2.70c; No. 26, 2.70c to 2.75c; No. 27, 2.75c to 2.80c; No. 28, 2.85c to 2.95c; No. 30, 3.25c; galvanized sheets, Nos. 10 to 16, 3.05c to 3.10c; Nos. 18 to 20, 3.15c to 3.25c; Nos. 22 to 24, 3.30c to 3.35c; No. 26, 3.50c to 3.55c; No. 27, 3.70c to 3.75c; No. 28, 3.90c to 4c; No. 30, 4.40c to 4.50c.

Structural Steel.—George W. Jackson, Inc., of Chicago, was the low bidder on the two bridges to be built for the sanitary district. This bid was $32,315. The bridges will require about 567 tons of steel. No large projects have been closed this week, but the unusually large number pending has been increased. The Michigan Central is asking figures on a bridge to be built at Joliet, and figures are also being taken on a smelter to be erected at Tooelee, Utah, by the Anaconda Copper Mining Co., which will require at least 5,000 tons of shapes. An extension to the government penitentiary at Leavenworth, Kans., 600 tons, is also in the market. The Santa Fe railroad has increased its tonnage option with the American Bridge Co. very liberally. The reports of the American Bridge Co. from its various western offices are gratifying so far as future business is concerned. San Francisco has pending over 6,000 tons; Kansas City, 3,000 tons; St. Louis, 1,400 tons; and Seattle, 2,000 tons. Prices of fabricated material continue weak, and even on mill orders there is cutting on certain sizes and shapes. We quote mill prices unchanged as follows:

Beams and channels, 3 to 15 inches, inclusive, 1.78c to 1.81c, delivered Chicago. For extras see Pittsburg report. Quotations from store are as follows for carload lots and over:

All angles, 3 inches and larger, in-

cluding 6 inches, $1.95 per 100 pounds; angles over 6 inches, $2.05 per 100 pounds, base; beams, 3 to 15 inches, inclusive, $1.95 per 100 pounds, base; channels, 3 inches and larger, $1.95 per 100 pounds base. Less than carload lots are $1 a ton higher than foregoing prices.

Rails and Track Supplies.—Specifications for standard sections have sufficiently improved to warrant the starting for the first time this year of the No. 1 rail mill at South Chicago. Operations will be commenced there in two weeks. The Gary rail mill will also be started next month, which is sooner than expected. The Corporation has approximately 100,000 tons of rails on its books for this plant, and 50,000 tons has to be gotten out very quickly. Contracts closed this week include 5,000 tons of Bessemer rails from the Nickel Plate, and 1,225 tons of open-hearth rails from the Chicago & Oak Park elevated railroad. There are inquiries pending for 5,000 tons of 80-pound rails from the Tooelee Valley Railway Co., 18,000 tons for the Great Northern, and 22,000 for the International & Great Northern. The Rock Island has sent in its last specification on the contract made in 1908, amounting to 18,000 tons, and has requested that a place be reserved for it in this year's rolling schedules. No indications have been made of the tonnage that this road will require, but it is believed to be in the neighborhood of 40,000 tons. There is very little new business in track supplies, but specifications continue good. Light rails are very quiet, and the current month's business will fall far below that of December. Prices are being shaded from $1 to $2 a ton on all sizes. We quote as follows:

Standard Bessemer rails, $28; open-hearth, $30, f. o. b. mill in 500-ton lots and over; less than 500 tons, $2 extra, full freight to destination; light rails, 25-pound to 45-pound, $26; 20-pound, $27; 16-pound, $28; 12-pound, $29. Track supplies, f. o. b. Joliet, angle bars, 1.50c to 1.60c; spikes, 1.80c to 1.90c; track bolts, with square nuts, 2.15c to 2.25c; with hexagon nuts, 2.30c to 2.40c. Small railroad and square boat spikes, 1.90c base, f. o. b. Chicago.

Merchant Pipe and Boiler Tubes.—Jobbers continue to specify only for current wants. Mixed carloads are the rule, a straight carload lot of any one size or material being very rare. Warehouse stocks are reported low all through the west. We quote mill discounts as follows:

	—Steel—	
	Black.	Galv.
¼ to 6 inches, inclusive.....	73.2	63.2
7 to 12 inches, inclusive.....	70.2	55.2

BOILER TUBES,

	Steel.	Iron.	Seamless.
2¼ to 5 inches, inclusive..	63.2	50.2	50.2

Cast Iron Pipe.—The municipality of Kansas City has rejected all the bids and will readvertise for prices on the 8,000 tons of pipe which it is considering buying. Other contracts pending are 1,000 tons for Minot, N. D.; 300 tons for Baldwin, Kans., and Minneapolis, 2,000 tons. The American Cast Iron Pipe Co. secured the contract for 200 tons for Mound Ridge, Kas., while the United States Cast Iron Pipe & Foundry Co. secured the contracts for 300 tons at Augusta, Kan.; 300 tons at Muscatine, Iowa and 500 tons at Enid, Okla. Prices remain firm, and we quote as follows: 4-inch water pipe, $28; 6 to 14-inch, $27; larger sizes, $26; gas pipe, $1 a ton higher.

Wire Products.—One of the most encouraging signs in the entire steel business is the steady demand for wire products. Here and there where railroad freight rates conflict with water rates, such as in Texas and Pacific coast points, there is some cutting of prices, but this is largely a local condition and is due to the keen rivalry for business among shipping interests. Generally speaking, prices are better maintained in wire products than in any other material. There is also a more uniform demand from the entire trade, showing that consumption is proceeding evenly in all sections of the country. Stocks in jobbers' hands are reported low. We quote for Chicago delivery as follows:

Wire nails, jobbers' carload lots, $2.13; retailers' carload lots, $2.18; painted barb wire, jobbers' carload lots, $2.28; retailers' carload lots, $2.33, with 30c for galvanizing; plain wire to jobbers in carloads, 1.98c, and to retailers in carloads, $2.03. Wire rods, Bessemer, $33; open-hearth, $34; chain rods, $33, f. o. b. Pittsburg.

Old Material.—There is no change to note in local conditions. The market is dull, buyers are apathetic and sellers have a plethora of material. These are the net results of the ill-timed boom of last fall. The market has flattened out until one scarcely exists. Prices of nearly all materials are lower than a week ago, and they have a strong sagging tendency. Melters are chary in adding to their stocks and are inclined to purchase only those lots that are offered at attractive prices. Country dealers have weakened perceptibly in their belief of an early upward movement, and are offering their stocks at concessions below current quotations, being hastened to this action doubtless by the calling in of their loans by many of the country banks. The only railroad list pending is that of the Burlington, which aggregates 6,500 tons, of which 1,000 tons is railroad wrought, and 700 tons re-rolling steel rails. We have revised our prices, and quote as follows:

Old car wheels	$15.25 to 15.75
Old iron rails	18.50 to 19.00
Rerolling rails (4 ft. and over)	15.50 to 16.00
Old steel rails (4 ft. and under)	14.50 to 15.00
Light section relayers, 45 lbs. and under, subject to inspection	21.00 to 23.00
Relaying rails, subject to inspection	19.00 to 19.50
Frogs, switches and guards	14.00 to 14.50
Heavy melting steel	13.75 to 14.25

We quote, net tons, as follows:

No. 1 R. R. wrought	13.50 to 13.75
No. 2 R. R. wrought	12.50 to 13.00
Knuckles, couplers and springs	13.00 to 13.50
Shafting	16.00 to 16.50
Iron car axles	19.50 to 20.00
Steel car axles	18.00 to 18.50
Dealers' forge No. 1	10.50 to 11.00
Pipes and flues	10.00 to 10.50
No. 1 cast, 150 lbs. and less	13.25 to 13.75
No. 1 mill	8.00 to 8.50
Mixed busheling (Nos. 1 and 2)	8.25 to 8.75
Country sheet	5.50 to 6.00
No. 1 boiler cut	10.00 to 10.50
Boiler punchings	12.50 to 13.00
Cast borings	7.00 to 7.50
Mixed borings, etc.	7.00 to 7.50
Machine shop turnings	8.50 to 9.00
Railroad malleable	12.50 to 13.00
Agricultural malleable	11.00 to 11.50
Stove plate and light cast scrap	12.00 to 12.50
Old iron splice bars	15.75 to 16.25

CLEVELAND.

Inquiry for Basic Withdrawn—Low Prices for Spot Coke.

Office of THE IRON TRADE REVIEW,
Browning Building, Jan. 26.

Iron Ore.—Labor unions on the lakes are showing a hostile attitude in attempting to punish some of their members who have made contracts on the open shop basis, but vessel interests are standing firm and do not expect any serious trouble at the opening of navigation.

On base ores with the guarantee of 55 per cent on old range and Mesabi Bessemer, and 51½ per cent on old range and Mesabi non-Bessemer, we quote as follows: Old range Bessemer, $4.50; Mesabi Bessemer, $4.25; old range non-Bessemer, $3.70; Mesabi non-Bessemer, $3.50.

Pig Iron.—The only inquiry of any importance which has been pending came from the Allegheny Steel Co., which asked quotations on 15,000 tons of basic for last half delivery, and decided not to purchase. In the absence of inquiry and buying, there is some tendency towards weakness, but prices are not quotably lower. Some requests to defer shipments are being made, and, on the whole, the outlook is not encouraging.

We quote, delivered in Cleveland, on spot iron as follows:

No. 1 foundry	$17.25 to 17.50
No. 2 foundry	16.75 to 17.00
No. 3 foundry	16.25 to 16.50
No. 2 southern	17.35
Gray forge	14.75 to 15.25
Bessemer	17.40 to 17.65
Lake Superior charcoal	19.50
Jackson Co. 8 per cent silvery	20.00

Coke.—The market for spot coke is very much demoralized. Large quantities of coke have accumulated in the Connellsville region, and furnace coke on contracts has been offered as low as $1.50 without being sold. Sharp curtailment of production seems to be absolutely necessary to prevent further demoralization. On standard foundry coke on contracts we quote $2.25 to $2.40, and $1.85 for furnace coke on contracts. For prompt delivery, we quote furnace coke at $1.50 to $1.60, and foundry coke at $2 to $2.15.

The principal sale of the week was 6,000 tons of standard section steel rails, the largest tonnage contracted for in a long time. Steel for the new Wick building at Youngstown, 1,000 tons, will be furnished by the Cambria Steel Co. Mills report that specifications have been very fair, representing a wide range of products. Cutting by some of the independent interests has been more open, and in some cases has taken the form of not charging for extras. Concessions thus made frequently amount to several dollars a ton.

Old Material.—The local market is dull. Local mills are slow to buy and then under only the most favorable conditions. A small quantity of material has passed from dealer to consumer in the past week, but it is so small that it is impossible to note accurately price changes. However, old car wheels have been marked up 50 cents a ton. We continue to quote f. o. b. Cleveland as follows:

Old iron rails	$18.50 to 19.00
Old steel rails (re-rolling)	16.50 to 17.00
Old steel rails (under 6 ft.)	16 50 to 17.00
Old car wheels	16.00 to 16.50
Old steel boiler plate	13.50 to 14.00
Malleable iron (agricultural)	13.50 to 14.00
Heavy steel	15.00 to 15.50
Country mixed steel	13.50 to 14.00
Low phosphorus	17.00 to 17.50

We quote, net tons, as follows:

No. 1 R. R. wrought	$15.50 to 16.00
No. 1 busheling	13.50 to 14.00
No. 1 machine cast	13.50 to 14.00
Iron axles	19.00 to 19.50
Axle turnings	10.50 to 11.00
Machine shop turnings	9.50 to 10.00
Grate bars	12.00 to 12.50
Malleable iron (railroad)	15.00 to 15.50
Steel axles	20.00 to 20.50
Pipes and flues	12.50 to 13.00
Tank iron	12.50 to 13.00
Hoop and band iron	9.25 to 9.75
Sheet iron	8.50 to 9.00
Wrought drillings	9.50 to 10.00
Stove plate	12.50 to 13.00
Cast borings	8.50 to 9.00

CINCINNATI.

Pig Iron Dull—Some Requests to Defer Shipments—Prices Firm.

Office of THE IRON TRADE REVIEW,
First National Bank Bldg., Jan. 26.

Pig Iron.—The past week has been exceedingly dull. Few sales are reported and inquiry is light. A local melter is asking for prices on 500 tons of 2 per cent to 2½ per cent silicon, 500 tons 1½ per cent to 2 per cent, and 500 tons of 1 per cent to 1½ per cent. This represents the only important purchase under consideration. The Indiana melter who has been in the market the past two weeks for southern foundry iron has bought during the past week in a scattered way in lots of from 100 to 200 tons, but the entire purchase is believed not to have aggregated 1,000 tons. There is some correspondence indicating a desire to test the market on third quarter deliveries, but no price has been named. It is believed that consumers would not consider a higher price than $13 Birmingham, and furnaces would be equally unwilling to make commitments on this basis for third quarter. The dullness in the market is accented by numerous requests to hold up shipments and this feature of the situation is calculated to give rise to talk of weakness. This attitude on the part of melters, if continued, it is thought, may have some effect on prices for prompt shipment, but at this writing southern furnaces continue to maintain $13 Birmingham uniformly for any delivery in the first half of the year, and the northern furnaces are adhering to their schedule of $15.50 at furnace and have turned down firm offers at moderate concessions. The easier feeling in the scrap iron market has given an easier tone to gray forge and the forge market is dull at $11.50 to $11.75 Birmingham. The speculative iron which has been on the market in this territory appears to be mainly in the hands of scrap iron men and has had no material influence on the general market. This iron is said to be mostly of one character described as a high phosphorus southern product.

We quote for prompt delivery, delivered Cincinnati, and for first quarter, or first half of 1909, based on freight rates of $1.10 from Ironton and $3.25 from Birmingham, as follows:

Southern foundry No. 1	$16.75 to 17.25
Southern foundry No. 2	16.25 to 16.75
Southern foundry No. 3	15.75 to 16.25
Southern foundry No. 4	15.25 to 15.75
Southern No. 1 soft	16.75 to 17.25
Southern No. 2 soft	16.25 to 16.75
Southern gray forge	14.75 to 15.25
Northern No. 1 foundry	17.10 to 17.60
Northern No. 2 foundry	16.60 to 17.10
Northern No. 3 foundry	16.10 to 16.60
Northern 8 per cent silicon	19.60

Finished Material.—The market continues quiet with specifications on contracts moderate. It is noticeable that specifications are coming out with requests to hurry shipments forward, indicating that the users of the finished lines are carrying very small supplies. The retail trade is light but there is no change in prices. Small orders from stock are filled here at the following quotations:

Iron and steel bars, 1.85c to 2c, full extras. Angles 3 x 3 and over, 2.10c to 2.25c; beams and channels, 15 inches and under, 2.10c to 2.25c; small angles and architectural channels, 2c base; plates, ¼-inch and heavier, 2c; 3/16-inch, 2.10c; No. 8, 2.15c; sheets, blue annealed, No. 10, 2.15c to 2.25c; No. 12, 2.20c to 2.30c; No. 14, 2.25c to 2.35c; No. 16, 2.35c to 2.45c; box annealed sheets, Nos. 18 and 20, 2.55c to 2.65c; Nos. 22 and 24, 2.65c to 2.75c; Nos. 25 and 26, 2.70c to 2.80c; No. 27, 2.75c to 2.85c, and No. 28, 2.85c to 2.95c; boiler tubes, 2¾ to 5 inches, 62 per cent off base; turnbuckles, 45 per cent off; rivets, 3c base; cold and rolled shafting, 47 to 50 per cent off list; steel tire, 2.05c to 2.10c base.

Coke.—Prompt shipment coke continues easy and the general market is irregular. Those interests which are well covered by contracts are maintaining prices; but there are other producers who have not enough contracts to take their output, which has resulted in some offerings at easy prices notably in the Connellsville district. The following quotations represent the range of quotation, the lower figures indicating what can be done on prompt shipment coke and the top prices are the figures asked on contracts. It is reported that some of the ovens are blowing out.

	PER TON.
Wise county furnace coke	$1.75 to 1.90
Wise county foundry coke	2.10 to 2.30
Pocahontas furnace coke	1.85 to 2.00
Pocahontas foundry coke	2.00 to 2.25
Standard Connellsville furnace coke	1.50 to 2.00
Standard Connellsville foundry coke	2.00 to 2.50

Old Material.—The market is unsettled and dull. Prices are regarded as lower, but in the absence of purchases by melters values are difficult to quote. Dealers are in some cases demanding previous prices, but are doing this rather than offer their holdings on a lifeless market. We quote dealers' prices here as follows:

Old No. 1 R. R. wrought, net tons	$14.50 to 15.00
No. 1 machinery, net tons	13.00 to 13.50

Old iron rails, gross tons	18.00 to 18.50
Old steel rails (re-rolling) gross tons	16.00 to 16.50
Old short lengths, gross tons	16.00 to 16.50
Old iron axles, net tons	17.00 to 18.00
Heavy melting scrap, gross tons	14.00 to 14.50
Stove plate, net tons	11.00 to 11.50
Heavy turnings	9.50 to 10.00
Cast borings, net tons	6.00 to 7.00
Car wheels, gross tons	15.00 to 15.50

PHILADELPHIA.

Pig Iron and Finished Materials Dull —Lower Scrap Prices.

Office of THE IRON TRADE REVIEW, 408 Central Trust Bldg., Jan. 26.

Pig Iron.—The local market continues without feature and is in a state of practically complete inactivity. No business of importance is being closed, so far as can be learned, and little new inquiry has developed. The situation, however, appears satisfactory to both producers and consumers and the market is firm, as there is no iron pressing for sale. Reports of stocks on hand at furnace yards in this district show little change from a month ago, when they were down to the lowest figure in many months. Furnaces are still compelled to do some rather skillful maneuvering in order to make deliveries on iron sold for first quarter, and hence are not inclined to quarrel with the present inactive conditions. Except for some small lots of re-sale iron and the product of one or two very small producers, southern iron seems to be maintaining the $13 basis, despite reports to the contrary in connection with recent large sales. We quote, first quarter delivery at Eastern Pennsylvania plants, as follows:

No. 1X foundry	$17.50 to 18.00
No. 2X foundry	17.00 to 17.50
No. 2 plain	16.50 to 17.00
Standard gray forge	16.00 to 16.50
Basic	16.75 to 17.25
Low phosphorus	21.50 to 21.75
No. 2 Birmingham	17.75 to 18.25
No. 2X Virginia	17.50 to 18.00
No. 2 plain Virginia	17.00 to 17.50

Finished Materials.—Interest is largely centered in the question of just how much longer the railroads will be able to keep out of the market. At present, their purchases are insignificant and their absence from the market is having the effect of delaying other purchases. The B. & O. rail tonnage, in particular, is looked for in the early future. In this connection the suggestion is frequently offered that no very heavy railroad buying can be expected until after the adjournment of legislative bodies from which hostile legislation might be expected. No new building projects have developed in this territory, though the Curtis building is expected soon. Otherwise, general trade is keeping up at a fair rate but without feature. We quote: Structurals, 1.75c to 1.90c; plates, 1.75c to 1.80c; refined bar iron, 1.50c to 1.60c; steel bars, 1.55c.

Old Materials.—Following the important developments reported a week ago in connection with the steel scrap contest between dealers and mills, there has been very little buying. Transactions in heavy melting steel have been confined to small lots which could not be carried longer. Mills are offering $16.50 and are willing to take on good tonnages at this figure, but as yet are securing very little. Other lines of scrap have weakened in sympathy with steel, but dealings are so limited that accurate quotations are difficult to establish. For spot shipment some small lots can be had at the lower figures following, but the larger dealers are holding firm and expecting a return of higher prices We quote, gross tons, Eastern Pennsylvania delivery, as follows:

Old steel rails (re-rolling)	$17.50 to 18.00
No. 1 steel scrap	16.50 to 17.00
Old steel axles	20.00 to 21.00
Old iron axles	22.50 to 23.00
Old iron rails	20.00 to 21.00
Old car wheels	16.00 to 16.50
Choice scrap R. R. No. 1 wrought	19.00 to 19.50
No. 1 yard scrap	16.75 to 17.25
Machinery scrap	16.00 to 16.50
Low phosphorus scrap	20.00 to 20.50
Wrought iron pipe	15.75 to 16.25
No. 1 forge fire scrap	15.00 to 15.50
No. 2 forge fire scrap, ordinary	10.00 to 10.50
Wrought turnings	13.00 to 13.50
Axle turnings, heavy	15.00 to 15.50
Cast borings	12.00 to 12.50
Stove plates	13.00 to 13.50

ST. LOUIS.

Some Large Building Projects—Pig Iron Strong at Recent Prices.

Jan. 25.

Pig Iron.—The market was strong in the St. Louis territory last week with some business placed for shipment over the next three and five months on a basis of $13, Birmingham, for No. 2. One order was placed at $13.25, Birmingham, for No. 2, but this covered a better grade of iron than No. 2 southern. A very satisfactory number of inquiries have come in during the last few days, indicating that buyers are becoming interested in future requirements. Inquiries aggregating 2,500 tons were received for shipment over the next three months, and one for 400 tons of malleable Bessemer is pending. The market on Ohio iron is firm at $15.50 to $15.75, Ironton, for No. 2, and there are some inquiries pending which may be closed this week.

Our quotations delivered, to which the freight of $3.75 from Birmingham has been added, follow:

No. 1 southern	$17.25 to 17.75
No. 2 southern	16.75 to 17.25
No. 3 southern	16.25 to 16.75
No. 4 southern	15.75 to 16.25

Coke.—The market for coke remains practically the same as during the previous week, with 72-hour best-selected Connellsville foundry grades ruling at from $2.25 to $2.75, ovens, for all deliveries. Two contracts were placed for shipment over the last half of 1909, on a basis of $2.75, ovens. Business for prompt shipment is on a basis of from $2.25 to $2.50, ovens. Furnace coke, 48-hour, can be had at from $1.50 to $1.75, Connellsville ovens. Shipments are coming along very satisfactorily. Virginia and West Virginia 72-hour foundry coke is selling at $2.25 for prompt shipment and at from $2.50 to $2.75 for future delivery. Virginia furnace grades are ruling at $1.75 to $2, ovens. The freight to East St. Louis and St. Louis is $2.80, and $2.70 from the Virginia fields when consignments are destined beyond St. Louis.

Finished Material.—Several contemplated enterprises have given stimulus to the finished product market within the last week. C. L. Holman, secretary of the Laclede Gas Light Co., has informed the council committee on public improvements that the company intends to spend between $12,000,000 and $15,000,000 in constructing the greatest plant of its kind in the world. He said the plant would be built in South St. Louis.

Mayor Wells has approved the third selection of engineers made by Andrew J. O'Reilly, of the board of public improvements, for the construction of the municipal bridge over the Mississippi river. The firm is Boller & Hodge, of New York city. The bridge now contemplated will cost approximately $3,500,000.

Old Material—The demand for scrap iron is about normal, according to dealers, with prices unchanged as follows:

Cast iron borings, free from foreign material, net tons	$ 6.00
Steel axle turnings, gross tons	12.50
Steel railroad axles, net ton	17.50 to 18.50
Iron railroad axles, net ton	19.00 to 20.00
Miscellaneous steel scrap, gross ton	12.50 to 13.50
Old car wheels, gross ton	16.00
No. 1 railroad cast scrap, net ton	12.00 to 12.50
Heavy machinery cast, net ton	13.00 to 14.00
Stove plate and light cast, net ton	11.50
Sheet iron, net tons, uncut	5.00
No. 1 railroad wrought, net ton	13.00 to 13.50
Railroad malleable, net ton	12.00 to 12.50
Heavy melting steel, net ton	13.00 to 13.50
Relaying rails, net ton	17.00 to 18.00

BUFFALO.

Pig Iron Market Dull—Some Inquiry for Second Half.

Office of THE IRON TRADE REVIEW, 932 Ellicott Square, Jan. 26.

Pig Iron.—The market is dull this week and sales have fallen off to some extent. It is not likely, according to trade reports in the Buffalo

district, that any notable increase in activity will be felt before two weeks, or a month, as most of the large consumers of pig are covered, many of them having contracted for first half. Certain furnace interests report having placed nearly all the product for first half. Some inquiries come in now for second half iron, but furnaces are not known to be quoting or taking orders for that delivery. The prices quoted last week are unchanged. We quote f. o. b. Buffalo as follows:

No. 1 X foundry	$16.75 to $17.25
No. 2 X foundry	16.25 to 16.75
No. 2, plain	15.75 to 16.25
No. 3	15.50 to 15.75
Malleable Bessemer	17.00 to 17.50
Gray forge	15.25 to 15.50
Charcoal	20.50 to 21.00

Finished Products.—Aside from figuring on specifications this week, there is little business, although the outlook is fair. The Buffalo sales offices of the Lackawanna Steel Co. have been removed from Ellicott Square to 206 Fidelity building. This change includes the offices of C. H. McCullough Jr., vice president and general manager and H. L. Stevens, district sales manager.

BIRMINGHAM, ALA.

Pig Iron Prices Firm—Strong Opposition to Lowering the Tariff.

Jan. 25.

The pig iron sales in southern territory about equal the make. There has been no improvement in the output recently, the manufacturers abiding the time for the active trading to start in. The quotations are firm at $13 per ton, No. 2 foundry, and indications point to this figure remaining in vogue for some time to come yet. In more than one office the statement was made that the market was quiet but firm. J. W. McQueen, of the Sloss-Sheffield Steel & Iron Co., is candid in his statement as to market conditions. "There is not much business being done right now," said he, "but the sales are about equal to the make."

Great interest is being taken in the proposed reduction in the tariff on iron and steel. Petitions will be presented the Alabama senators protesting against any change whatsoever, the claim being made that the Birmingham district would be the greatest sufferer from any reduction in a tariff change.

The property of the Tecumseh Iron Co., including 10,000 acres of brown ore lands, has been purchased by the Birmingham Coal & Iron Co.

NEW YORK.

Pig Iron Dull, But Prices Firm—Little Activity in Structurals.

Office of THE IRON TRADE REVIEW, Room 1005, No. 90 West St., Jan. 26.

Iron Ore.—The selling movement of foreign ores into the coast territory seemingly has spent itself, and little is now being done in local ores, as furnace interests are well covered for the near future and are not concerned about their more advanced requirements. Not much foreign iron is available. The heavy contract recently reported for Adirondack ore for a large eastern steel plant was closed during the past summer and will run for a term of years.

Pig Iron.—The situation is unique in that the market continues thoroughly strong in spite of the absence of any important business. Only one interest in this district reports a good volume of selling, having closed some 20,000 to 30,000 tons of various irons during the last week. Other interests are making occasional sales of small tonnage, but the aggregate is not equal to these figures. An eastern Pennsylvania steel works, which has been in the market for basic for some months, has taken on a small tonnage, probably about 5,000 tons, to cover its immediate requirements. Another steel concern in that district has inquiries out for 7,000 tons of Bessemer iron. Throughout the region there is a good call from foundries for low grade irons to replace scrap in their melting, but this is hard to secure, owing to its scarcity. In addition to its 20,000-ton purchase recently noted, a pipe interest in the Philadelphia district has made other moderate purchases, probably aggregating 5,000 tons. There is an inquiry pending from a machinery manufacturer for from 1,200 to 2,400 tons of 2X and 2 plain, but the smaller tonnage will probably be closed for, as the larger figure would involve very extended delivery. Foundrymen seem to be operating in somewhat better shape than is commonly supposed. On spot iron one or two interests are making concessions, sales coming to light at as low as $16 furnace, but for shipment over any period higher figures are secured without difficulty. We quote, New York tidewater delivery, first quarter, as follows:

Northern foundry No. 1	$17.25 to 17.75
No. 2X foundry	17.00 to 17.25
No. 2 plain	16.50 to 17.00
No. 2 southern foundry	17.25 to 17.75
Malleable	18.00 to 18.50
Basic	17.00 to 17.25
Gray forge	16.25 to 16.75

Ferro-Alloys.—A fair volume of business is noted in both ferro-manganese and ferro-silicon, sales of the latter aggregating a good tonnage. An inquiry is current from a western steel interest for 500 tons of ferro-manganese. We quote, $44 to $44.50, seaboard, for ferro-manganese, and $62 to $62.50 Pittsburg, for ferro-silicon.

Finished Materials.—Structural contracts closed during the past week have been extremely small, and new developments are limited. Railroad work in particular is being closely confined to that which is absolutely imperative. The Pennsylvania system, however, is considering a track elevation project in Philadelphia, which will call for 10,000 to 12,000 tons of steel. Bids have gone in again on the Kentucky river bridge for the New Orleans, Texas & Pacific railway, requiring about 6,500 tons. The Milwaukee, St. Paul & Soo railway is in the market for 500 tons of girders for street work in St. Paul. No important rail sales are noted, but the Atlantic Coast line is anticipating shipments on a part of the 25,000 tons purchased some time ago from the Pennsylvania Steel Co., for March to June delivery.

Philadelphia has let a contract for a 400-ton school building to the McClintic-Marshall Construction Co., and another of the same size to the Reinforced Concrete Construction Co. A highway bridge at Augusta, 450 tons, has gone to the Roanoke Bridge & Iron Co. The Eastern Steel Co. will supply the steel, something over 1,000 tons, for a Cincinnati building colony to be established at Gardner's Bay. The Jenkins building at Pittsburg, 500 tons, will probably go to the American Bridge Co. Geo. W. Jackson, Inc., is low bidder on 560 tons of bridge work for the North Shore canal project at Chicago. The Powell candy factory in this city, 650 tons, is reported placed. The government is to enlarge the Leavenworth, Kan., penitentiary, requiring 600 tons of steel, and the John Hancock Insurance Co. has a 1,100-ton building in prospect at Boston. General contractors are asking steel bids on 700 tons for a wool storehouse at Charlestown, Mass. Official denial is given the report that the weights of the Bethlehem 12-inch and 15-inch beams are to be increased.

We quote: Angles, 2 to 6 inches x ¼-inch and heavier, 1.76c; beams, 3 to 15 inches, 1.76c; tees, 3 x ¼-inch and heavier, 1.81c; plates, carloads, tanks,

1.76c; marine boilers, 2.16c; bar iron, 1.56c to 1.61c; soft steel bars, 1.56c; sheets, No. 28, black, 2.66c.

Old Materials.—The market is lower and extremely dull. Sales are confined to small lots, on which movement is forced, and altogether the market is in a less satisfactory condition than for several months. We quote, gross tons, New York delivery, as follows:

Old steel rails (re-rolling)	$14.50 to 15.00
Relaying rails	21.50 to 22.00
Old car wheels	14.00 to 14.50
Old iron car axles	19.00 to 20.00
Old steel car axles	18.50 to 19.00
Heavy melting steel	14.00 to 14.50
No. 1 railroad wrought	16.25 to 16.75
Iron track scrap	14.50 to 15.00
Wrought pipe	12.50 to 13.00
Cast borings	9.00 to 9.50
Wrought turnings	10.50 to 11.00
Heavy cast scrap	14.00 to 14.50
Railroad malleable	13.00 to 13.50
Stove plate	10.00 to 10.50
Grate bars	11.00 to 11.50

The DeCamp Bros. & Yule Iron Coal & Coke Co., St. Louis, has elected officers for the ensuing year as follows: President, William Yule; vice president, Frank DeCamp, treasurer, Alexander Yule; secretary, N. P. Withington. Mr Withington was elevated from the position of manager of the sales department, an office he has held for quite a while with profit to the company and credit to himself.

METAL MARKET

ST. LOUIS.

Jan. 25.

Lead and Zinc.—A surplus of minerals in the Missouri-Kansas-Oklahoma district last week, caused largely by the accumulations of the previous week, resulted in a decline in prices. The price obtained in the Joplin camp was $42.50 base for 60 per cent zinc ore. There were many sales reported at a lower price, and with some of the largest producers in the district closed on account of the slump, the demands of smelters are easily met. The price of silicate of zinc last week was 20. Lead sold for $53 a ton, and sales were reported to be a little light.

The metal market in St. Louis and New York underwent practically no changes. St. Louis spelter was quoted at $5.05 and lead at $4.07½. There was a drop in New York spelter of 2½ points, making the price $5.15. Lead remained stationary in New York at $4.20.

CHICAGO.

Jan. 26.

There is practically no change in the local metal market. Supplies are plentiful, demand is light and prices are soft. We quote as follows:

Lake copper, carload lots, 14¼c to 14½c; castings, carload lots, 14c; pig tin, 30c to 30¼c; spelter, 5.25c to 5.50c; pig lead, desilverized, 4.35c to 4.40c in 50-ton lots; corroding, 4.80c to 4.85c in 50-ton lots; car lots, 2½c per 100 pounds higher; sheet zinc, 7c list, f. o. b. LaSalle in car lots of 600-pound flasks; Cookson's antimony, 10½ to 11c; other grades, 10c.

The only change in old metals is that prices of copper, brass and lead scrap are lower. We quote as follows:

Copper wire, 12½c; heavy copper, 12½c; light copper, 11¼c; heavy red brass, 11½c; heavy yellow brass, 8½c; light brass, 6½c; No. 1 red brass borings, 9c; No. 1 yellow brass borings, 9c; brass clippings, 8½c; tea lead, 3¼c; lead scrap, 3¾c; zinc, 3.25c; tin plate, 24c; tin foil, 23c; pewter, 16c; electrotype plates, free from wood, 4c; electrotype dross, 2¾c; stereotype plates, 4¼c; stereotype dross, 3c; prime slab zinc dross, $55 per ton.

NEW YORK.

Jan. 26, 1909.

Copper.—Following the liquidation in the London market last week of several large speculative accounts, the local situation has been weak and trading extremely light on a lower schedule of prices. Both foreign and domestic consumers manifest little interest in the metal, which is now quoted as follows: Lake, 14c to 14¼c; electrolytic, 13⅝c to 13¾c; casting, 13½c to 13⅝c.

Pig Tin.—The market continues in much the same condition as a week ago, being without strength but now and then experiencing a reaction toward higher prices. Current business is being done at 27¾c to 28c.

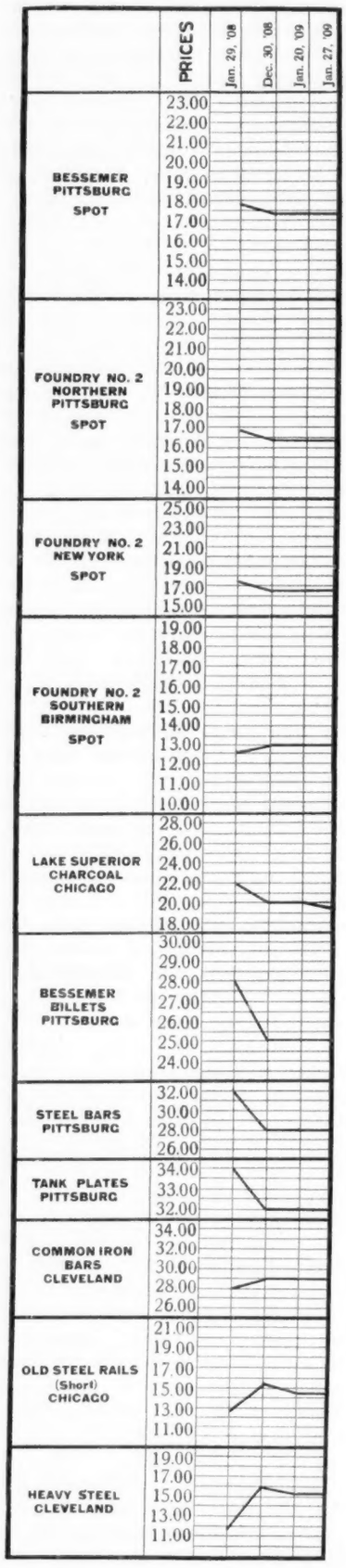
Pig Lead.—The local market is in a dull condition, no change being noted in the situation from that reported a week ago. We quote 4.15c to 4.20c, New York.

Spelter.—Slightly greater eagerness on the part of producers to dispose of their accumulations has eased off the price somewhat and we now quote 5.12½c to 5.15c, New York.

Antimony.—Little activity is reported. Cookson's is quoted at 8⅛c to 8¼c; Hallett's at 8c to 8¼c; ordinary brands at 7½c to 7⅝c.

The Marsh Bridge Co., Des Moines, Ia., through President J. B. Marsh, has made a voluntary assignment. The liabilities are listed at $50,690.24, and the assets at $72,138.68.

PRICE CHART.



QUARTERLY REPORT

Of Steel Corporation Shows Larger Unfilled Tonnage and Smaller Earnings.

The statement of the United States Steel Corporation and subsidiary companies for the quarter ended Dec. 31, 1908, was issued Jan. 26. The directors declared the quarterly dividend of 1¾ per cent on preferred stock and ½ of 1 per cent on common, both unchanged from the previous quarter.

The total unfilled orders on hand Dec. 31, 1908, shows an increase of 181,550 tons over the quarter ending Sept. 30. The increase in unfilled orders for the quarter ending Sept. 30 over the previous quarter ending June 30, was 108,101 tons. The earnings for the quarter ended Dec. 31, showed a decrease of $880,789, compared with the quarter ending Sept. 30. The net earnings for the quarter ended Dec. 31 showed a decrease of $298,750. The earnings for the year 1908 were $91,826,520, a decrease compared with 1907 of $69,138,153. The net earnings for the year were $74,842,330, a decrease of $58,402,599. The surplus for the quarter ending Dec. 31 shows a decrease of $9,572 compared with the preceding quarter and a decrease of $4,216,823, compared with the last quarter of 1907. The surplus for the year was $10,497,935, a decrease of $4,681,902.

EARNINGS.

October, 1908	$9,415,668	
November, 1908	8,756,729	
December, 1908	8,053,088	
Total earnings after deducting all expenses incident to operations, including those for ordinary repairs and maintenance of plants, employes' bonus funds, and interest on bonds and fixed charges of the subsidiary companies		$26,225,485
Less, charges and appropriations for the following purposes, viz.:		
Sinking funds on bonds of subsidiary companies	$ 248,272	
Depreciation and reserve funds	4,965,550	
		5,213,822
Net earnings		$21,011,663
Deduct:		
Interest for the quarter on United States Steel Corporation bonds outstanding	$5,942,354	
Sinking funds for the quarter on United States Steel Corporation Bonds, viz.:		
Installments	$1,012,500	
Interest on bonds in sinking funds	357,109	
	1,369,609	
		7,311,963
Balance		$13,699,700
Add: Net adjustments in sundry accounts		289,183
		$13,988,883
Dividends for the quarter on stocks of the United States Steel Corporation, viz.:		
Preferred, 1¾ per cent	$6,304,919	
Common, ½ per cent	2,541,513	
		8,846,432
Surplus for the quarter		$ 5,142,451

W. J. FILBERT,
Comptroller.

UNFILLED ORDERS ON HAND.

Dec. 31, 1908 ..... 3,603,527 tons

CRUCIBLE'S CHAIRMAN.

Herbert DuPuy Chosen to Succeed William G. Park, Deceased.

Herbert DuPuy, of Pittsburg, has been chosen chairman of the executive committee of the Crucible Steel Co. of America, vice William G. Park, deceased. It is understood that Mr. DuPuy accepted the chairmanship only until such time as a capable man could be selected to succeed him.

Other changes among the officials of the Crucible company have been brought about by Mr. Park's death. George E. Shaw, of Pittsburg, has been selected a member of the board of directors to fill Mr. Park's vacancy; John A. Sutton, third vice president, has been made second vice president; C. C. Ramsey, of New York, fourth vice president, has been made third vice president; O. H. Wharton has been made fourth vice president and a member of the board of directors to fill the vacancy caused by the death of Alexander Thomas. The secretaryship of the company, which was also held by Mr. Thomas, has not yet been filled.

FIRST HEAT MADE

In Open-Hearth Furnaces of Carnegie Steel Co. at Youngstown.

An event of more than passing importance in the iron and steel industry as indicating the steady advance of open-hearth steel making, was the making of the first heat in the new open-hearth department of the Ohio works of the Carnegie Steel Co. at Youngstown, O., Jan. 25. The first operation of the new plant was entirely satisfactory.

The completion and firing of a portion of the group of 12 60-ton furnaces at the Ohio works places the Carnegie Steel Co. for the first time in a position to roll open-hearth rails as a self-contained operation in any of its works.

Six of the new open-hearth furnaces at the Ohio works are now complete, and a second set of six furnaces is rapidly nearing this stage, so that the entire 12 may soon be in operation if business conditions justify such activity.

Honor for Mr. Swank.—The trustees of Temple University have voted to confer the LL. D. degree on James M. Swank, general manager of the American Iron and Steel Association, and the ceremony will take place on founders' day of the university, Feb. 13, at 2 P. M. in the Academy of Music, Philadelphia. Hon. E. C. Stokes, former governor of New Jersey, will deliver the principal address and will also receive the LL. D. degree. This honor is conferred on Mr. Swank as a recognition of his great service to the business interests of the country and also as a tribute to his literary attainments as shown in his books, including "Iron in All Ages," "Notes and Comments" and "Progressive Pennsylvania." It is expected that a number of Mr. Swank's friends in the iron trade will attend the exercises.

No Bolt Price Changes.—The Bolt, Nut and Rivet Association held its annual meeting Jan. 19 in New York City, when covers were laid for 54 persons in the Waldorf apartments. The speakers of the evening included Chairman John A. Topping, of the Republic Iron & Steel Co.; H. P. Bope, of the Carnegie Steel Co., and Vice President S. P. Kerr, of the United States Steel Corporation, all of whom spoke along the line of co-operation, new methods in business and ideals as applied to business. President James Lord, of the association, was presented a loving cup, the presentation speech being made by S. Bourne, of Cleveland. Conditions throughout the trade were reported unchanged, and prices were reaffirmed.

Stockholders of the Allentown Rolling Mills, March 24, will vote on a reduction of the capital from $1,000,000 to $400,000.

THE IRON TRADE REVIEW

Devoted to Iron and Steel Manufacture and to the Machinery, Metal-Working and Foundry Trades

PUBLISHED EVERY THURSDAY BY
THE PENTON PUBLISHING CO.
CLEVELAND.

BOSTON.....73-74 Journal Bldg.
BUFFALO.....932 Ellicott Sq.
CHICAGO.....1328 Monadnock Blk.
CINCINNATI.....First National Bank Bldg.
NEW YORK.....1005 West Street Bldg.
PITTSBURG.....510 Park Bldg.
SEATTLE.....302 Pioneer Bldg.

Subscription, United States and Mexico, $3.00 per annum. To Canada and Foreign Countries, $4.50. Advertising Rates Furnished on Application.

Change of advertising copy must reach this office ten days preceding date of publication.

The Cleveland News Co. will supply THE IRON TRADE REVIEW through the regular channels of the American News Co.

European Agents: The International News Company, Breams Building, Chancery Lane, London, E. C., England.

ENTERED AT THE POST OFFICE AT CLEVELAND AS SECOND CLASS MATTER.

PRINTED IN AN OPEN SHOP.

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January 28, 1909.

A BROAD VIEW OF THE TARIFF.

When, in the presidential campaign of 1880, General Hancock remarked that the tariff was a local issue, he was subjected to much ridicule, but it is too often true that in making tariff schedules, local and selfish interests have much greater influence than ought to prevail. In this vast country, different industries and different localities often have conflicting interests, and the need of the country demands broad consideration of the tariff by men big enough to subordinate the interests of the few for those of the many. It also requires that in readjusting schedules the revenue needs of the country shall not be neglected, and that the policy of protection shall be reasonably but firmly adhered to.

In the immense array of facts and figures which has been presented for consideration to the ways and means committee at Washington, is found evidence that while some manufacturers take a broad and unselfish view of the whole situation, others are inclined to offer evidence along very narrow lines. Take, for example, the pig iron schedule. There is a demand from the Pacific coast for the removal of the tariff, and one concern has filed a statement that "by reason of the high tariff of $4 per ton on pig iron, we have to close down our foundry from time to time, and have not operated since November, 1907." It is probable that, as the statement says, the removal or reduction of the tariff would assist some industries of the Pacific coast, but, on the other hand, pig iron manufacturers of the eastern states assert that a reduction of over $1 on pig iron would cause the general suspension of operations by blast furnaces in that territory. The interests of the many clearly demand that a heavy reduction shall not be made. In the case of old material, there is general concurrence in the opinion that the present duty of $4 per ton is very much too high. Users of scrap in New England are especially anxious to have the tariff reduced. One concern in Connecticut asserts that the demand for open-hearth steel has so increased the requirements for scrap that not enough is made in this country to supply the demand. Even a producer and seller of scrap has joined in the demand for taking off the duty, stating that this country needs all the raw material in the way of iron and steel scrap that can be brought across the border. We do not believe, however, that the duty on scrap should be entirely removed, as this material, if admitted at a low rate, would result in considerable revenue to the government. On the question of duty on machinery and machine tools, considerable evidence has been presented by manufacturers which shows that the present prohibitive duty of 45 per cent ought to be reduced. It is argued that lower tariff should be extended at least to the countries that favor us, and that such action would prevent the threats of higher tariff now being made by some foreign countries from being carried out. Here also is an excellent chance to provide revenue, while at the same time making provision for a tariff high enough to cover the difference in wages between this country and the principal manufacturing nations of Europe.

Never before has there been a more urgent necessity for broad, American feeling in considering the tariff problem. If statesmen at Washington and manufacturers in all parts of the country will act from motives of disinterested patriotism, the solution will not be so difficult as may be imagined, a reasonably protective tariff bill can be prepared, ill effects can be reduced to a minimum, ample proision for the increasing revenue needs of the country can be made, and the way be paved for the speedy return of prosperity.

The index for volume XLIII of THE IRON TRADE REVIEW, July 1 to Dec. 31, 1908, has been printed and will be sent to subscribers who so request. The index will be mailed as heretofore to those who have asked for it in past years.

THE DECREASE IN FOREIGN TRADE.

Statistics of iron and steel exports from Great Britain for the full calendar year 1908 show that the total in tonnage was 4,100,976 gross tons, a decrease of 20.4 per cent from 1907. Provisional figures for the United States, obtained by estimating December exports as equal to those for November, indicate a total for the United States of 957,535 tons for the calendar year, a decrease of 26.5 per cent from 1907. German statistics have not become available, but reports have been uniformly to the effect that there has been a material falling off all through the year.

The iron and steel export trade of the United States is of recent growth, compared with that of the United Kingdom. When the United States was an importing nation in iron and steel, importing a large tonnage annually, and exporting but little, it was almost wholly from England that the supplies were drawn. The German export trade is also relatively new, not

getting on a solid foundation until after the United States had become practically self supporting.

Until 1900, the iron and steel exports of the United States did not reach the dignity of seven figures. When, in 1897, a trifle over 250,000 tons of pig iron was exported, chiefly from Alabama, the movement attracted a great deal of attention. Miserably low prices were made on that iron, probably below the cost of production, but the producers were glad to get the iron off on any terms. From 1897 to 1900, inclusive, our pig iron exports averaged a trifle over 250,000 tons a year. Neither before nor since have they reached 100,000 tons in a year. Beginning with 1900, iron and steel exports of the United States and Great Britain have compared as shown in the table below. The classifications are quite different in the two countries, but the totals can be compared with some confidence. The British figures do not include old material, exports of which have run from 100,000 to 200,000 tons a year.

Total Iron and Steel Exports, Gross Tons.

	United States.	United Kingdom.
1900	1,154,284	3,447,437
1901	700,857	2,812,523
1902	372,398	3,473,645
1903	326,590	3,514,694
1904	1,167,710	3,266,248
1905	1,010,255	3,721,515
1906	1,325,740	4,682,200
1907	1,301,981	5,152,227
1908	957,535*	4,100,976

*December estimated.

As noted, the 1908 decline was 26.5 per cent in the case of the United States, and 20.4 per cent in the case of the United Kingdom. The actual declines were 344,446 tons for the United States and 1,051,251 tons for the United Kingdom, being more than three times as great for the latter, although the percentage decline was only three-fourths as large.

The experience of 1908 has shown that American steel manufacturers are not disposed to resort to dumping, as they once did, when domestic demand is insufficient to keep capacity in full operation. The exports of last year were made at a profit; not at a large profit, perhaps, but still at a profit. Foreign producers were not undersold to any extent, there being no more than ordinary competition. The exports were widely distributed as to character, and largely as to destination.

In 1907 British exports were nearly four times as great as our own, while in 1908 they were more than four times as great. The difference is the more remarkable when the producing capacity of the two countries is taken into account. Measured by capacity for the production of castings, rolled iron and rolled steel, Great Britain is about a 10,000,000-ton country, while the United States has been a 25,000,000-ton country for a couple of years, and will soon be more than a 30,000,000-ton country. Great Britain has been exporting about half her product; we have not been exporting 10 per cent of ours. The decline in our production last year was about 10,000,000 tons, equal to the entire international demand at its best. It is utterly impracticable to dump our surplus product under such conditions, or even the greater part of it, the only feasible policy being to sell what can be sold at a moderate profit, and to be content with a more moderate profit in bad times than in good. This policy the American producers have followed.

The British exports are not clear profit to the British iron and steel trade as a whole to the same extent as is the case in the American trade. Comparatively little of our exports are produced from imported raw material. Nearly all the iron and steel exported, in whatever form, is the product of American mines and iron and steel plants throughout. Great Britain is differently positioned. With no tariff and with low freight rates from Spain, Sweden, Norway and Germany, Great Britain draws largely from these countries in iron ore, pig iron and crude steel, millions of tons of iron ore, a moderate tonnage of pig iron, and often as much as 1,000,000 tons of crude steel in a year. England is able to take advantage of all trade conditions and combines trading with manufacturing in a peculiar way.

ANNUAL REPORT OF THE INLAND STEEL CO.

The annual report of the Inland Steel Co. for the year ending June 30, 1908, the first statement made public following its recent bond sale, shows these figures:

INCOME ACCOUNT.

Sales, less discount and exchange		$6,317,499
Cost of sales		5,575,169
Gross earnings from operation	$	742,330
Other income—rentals and miscellaneous credits		12,493
Total earnings and income from all sources	$	754,823
Interest and bond interest		102,981
Net income for the year	$	651,842

The company's balance sheet as of June 30, 1908, follows:

ASSETS.

Plant, etc., July 1, 1907	$4,620,291	
Net additions since	1,930,729	
		$6,551,020
Mine leasehold	$ 722,569	
Less amortization fund	61,514	
		661,655
Finished product, raw material and supplies		1,158,821
Customers' accounts, after deducting reserves		798,665
Bills receivable		67,034
Inland Coal & Washing Co.		11,658
Miscellaneous		28,982
Cash		286,476
Insurance unexpired, etc.		12,459
Total		$9,571,171

LIABILITIES.

Capital stock	$5,100,125
First refunding mortgage 6 per cent bonds	2,897,000
Trade acceptances	40,445
Accounts payable	391,264
Unpaid and unclaimed wages	75,325
Taxes, etc., accrued	21,643
Miscellaneous	10,751
Bond interest accrued	43,455
Reserves for relining furnaces, etc.	23,005
Surplus July 1, 1908	968,156
Total	$9,571,171

President Alexis W. Thompson speaks thus of the year's operations:

The net profits show over 12 per cent earned on outstanding capital stock over all fixed charges, bond interest and reserves for exhaustion of ore mines, relining furnaces, accident insurance, etc. While the production shows an increase of 10,561 tons over the previous year, very little of the extensive improvements have added as yet to the enlarged capacity of the plants. In making comparison with the year 1906-7 there was a decrease of profits of $332,480. The financial disturbances commencing early in October, 1907, account for this. All of the new construction and improvements are completed and no further expenditures of any consequence are at present contemplated. With a well rounded plant, with additional steel capacity and a much larger diversity of products than heretofore, with a fair volume of tonnage booked and increasing business, the ensuing year's results should be encouraging.

Henry H. Stambaugh was elected president of the Brier Hill Iron & Coal Co., Youngstown, O., in succession to the late George Tod, at the annual meeting of the stockholders. John Tod was chosen vice president, J. G. Butler Jr., general manager, and R. C. Steese, secretary-treasurer. A board of directors was elected, including Mr. Butler, Mr. Stambaugh, Mr. Tod, together with David Tod and William G. Pollock. Mr. Stambaugh was formerly treasurer of the company.

DECISION IN FAVOR OF PITTSBURG STEEL FOUNDRY.

The case of the Pittsburg Steel Foundry vs. the Pittsburg Steel Co., which had been pending for several years, has been decided by the supreme court of Pennsylvania. In 1899 the Pittsburg Steel Foundry entered into a contract with the Pittsburg Steel Hoop Co. (which was absorbed by the Pittsburg Steel Co.) to supply it with ingots. The contract provided for a term of two years and that the profit to the foundry company should not be less than $50,000. It further provided that the price of the ingots should be 15 per cent over and above the cost of producing the same.

At the time the contract was made, in June, 1899, the market for steel was rapidly rising and continued to rise until about the last of 1899. During that summer, the foundry company bought at the direction of the steel company large quantities of pig iron and scrap; at that time the market was very high. By the time the hoop company was ready to operate its mill, the decline in the market was very marked. The evidence in the case showed that the company also had innumerable troubles getting its mill to operate. This and the high price of the material which had been bought on its order to manufacture the ingots made the billets manufactured from the ingots excessively high priced.

The supreme court states in reviewing the case "That at the time the contract between the plaintiff and the defendant was made in June, 1899, the market for steel was rapidly rising and continued to rise until the last of 1899, when it began to fall and continued to decline until March, 1901, and the defendant company could purchase open-hearth steel billets at an average cost of $20 a ton less than they were costing the defendant company when made of the high priced melting materials purchased on order of the defendant. It is very apparent, considering the price of steel in the winter of 1901, that it was very greatly to the advantage of the defendant to get rid of the contract for the reason that it could buy steel at very much lower prices than its cost would be to it under the contract and there is no apparent reason why the plaintiff should avoid the contract."

The court further states: "All would have gone smoothly, no doubt, between the parties had it not been for the change of the market price of steel, as is shown in the findings of facts which are affirmed by the trial judge."

The supreme court allowed the foundry company for all ingots supplied and for the agreed profit to accrue, i. e., $50,000, and for the loss of the materials purchased on its order, but did not allow for the cost of the portions of the plant charged by the plaintiff. The foregoing amounts with interest to date will amount to about $130,000.

The Pittsburg Steel Foundry was represented by Attorneys D. T. Watson and John M. Freeman, and the Pittsburg Steel Co. by Attorneys Willis F. McCook and John Jarrett.

FAREWELL TO MR. SHELDON.

A farewell reception and banquet was given in Buffalo Saturday evening, Jan. 23, in honor of Samuel Bertram Sheldon, retiring general superintendent of the Lackawanna Steel Co., who has accepted a position with the Bethlehem Steel Co. The function was given by the officials of the Lackawanna Steel Co.,

S. B. Sheldon.

Mr. Sheldon is another example of the man who climbs to the top and his record as an official in the steel industry, the keen business tact he possesses, and the judgment and foresight he has shown in guiding the affairs entrusted to his management, have won him distinction. Testimony of this was shown by the generous praise offered Mr. Sheldon at the farewell gathering and the regret manifested at his leaving his associates. As evidence of their sincerity, the officials of the company presented Mr. Sheldon a loving cup beautifully engraved with appropriate lines. Mr. and Mrs. Sheldon will also take with them to their new home a solid silver tray and set of six pieces of rare beauty as a token of friendship and love from the officials and the employes of the company. The committee which guided the banquet and presentations to splendid success consisted of S. P. Lewis, G. W. Smith, W. G. O'Malley, T. H. Mathias and A. H. Lee. Mr. Lewis presided as toastmaster and made an eloquent address touching on the relations between Mr. Sheldon and his associates, which excited much interest. The lines from Mr. Lewis' pen, written for this occasion, made a decided hit. Franklin Abbott's speech in behalf of all present was particularly well received.

MERCHANT MARINE BILL

Indorsed by Illinois Manufacturers' Association.

The Illinois Manufacturers' Association in session at Chicago, Jan. 22, went on record in favor of the passage by congress of legislation now pending for the development of a larger American merchant marine. The action was taken at a luncheon given at the Auditorium hotel, following addresses by John Barrett, director of the bureau of international republics, and James T. McCleary, of Minnesota, former assistant postmaster general.

The resolutions adopted declared that without a larger American commercial fleet the Panama canal will be only a subsidy to foreign vessels, which in time of war may prove dangerous as an auxiliary to foreign navies.

Mr. Barrett asserted that the United States was losing billions in South American and oriental trade by neglecting the development of its merchant marine, and Mr. McCleary declared the country's postal profits should be applied to shipbuilding.

Mr. McCleary also declared that while American citizens were applauding the spectacle of the battle ship fleet cruising around the world the country was the laughing stock of the old world's naval officials because the American fleet was accompanied by a convoy of foreign auxiliary vessels.

At a meeting of stockholders of Henry Disston & Sons, Inc., at Philadelphia, March 19, authorization of an increase of $350,000 capital stock will be voted on, the increase to be used in extending the plant.

PIG IRON COSTS.

(Continued from first page).

with foreign costs as far as ascertainable in this table:

Furnace Costs—Pig Iron.

	Cost per gross ton.
Eastern Pennsylvania	$18.79
Buffalo	16.45
Southern Ohio	16.44-16.19
Mahoning and Shenango valleys	16.60-17.79
Middle West	16.10
Virginia	14.21-14.17-14.43
Alabama and Tennessee	12.93-11.00
Germany	8.71-10.16
England	9.48

The Buffalo costs, which do not include interest, insurance or any return on capital, are as follows:

2.10 tons iron ore	$8.53
1.25 tons coke	4.87
0.65 tons limestone	0.55
All other manufacturing costs, except interest	2.50
Cost per ton of pig iron f. o. b. cars at the furnace	$16.45

One southern Ohio pig iron maker, who gave his 1907 cost per ton as $16.44, says: "We can still make iron at the 1898 cost ($8.43 per ton) if labor at the ore and coal mines, on the railroads and at the furnaces is put back on the basis of $1 per day for common laborers, or 50 per cent reduction on everything from present costs. Only sentimentalists and theorists want such conditions."

The detailed cost of producing 119,081 tons of basic and Bessemer in the Mahoning valley in 1907 is as follows:

Material—		
Ore	$9.3086	
Converter slag	0.0045	
Sand	0.0254	
Coke	4.6785	
Limestone	0.5353	
		$14.5523
Operating labor		1.2673
Running expenses		0.1622
Casting machine		0.0242
Running repairs		0.0136
Taxes and insurance		0.0860
Relining and depreciation		0.5000
Total		$16.6056

The average cost of making pig iron per ton in Virginia for five years, 1903 to 1907 inclusive, where furnaces own and operate their own ore mines, coal mines, limestone quarries, coke ovens, is given by the company as follows:

Wages in all departments	$9.42
Supplies and renewals of equipment	0.80
Horses, mules, etc	0.49
Assembling freights	2.10
Taxes	0.18
Royalties on coal, ore and limestone	0.70
Depreciation of plants to keep modern	0.20
Selling commissions	0.28
Total	$14.17

The largest producer of pig iron in Virginia, through one of its officers, states its position thus: "By adding the average freight rate on a ton of pig iron from our furnaces to our eastern ports, it would be seen at a glance that the maintenance of the present tariff on pig iron is one of very great importance to us. Our company is the largest producer of pig iron in this section of the country, and in fact is the largest employer of labor in the state of Virginia, common carriers excepted. We employ, when running at full capacity, between 5,000 and 6,000 men, and contribute to the support of probably 25,000 people. * * * It is hard to imagine anything that could happen to the working people of this state that would so seriously affect so large a number of men as such tariff legislation as would make it impossible for us pig iron manufacturers to compete with foreign iron. In the light of the facts as they exist today, we feel that a radical reduction of the tariff on pig iron would be disastrous to the iron industry in this section, and any reduction whatever would be very harmful to it."

A representative manufacturer of merchant pig iron in Tennessee declares: "Our cost for manufacturing pig iron in 1907 was $12.93 per ton, leaving out interest on investment. The cost was made up entirely of labor, with the exception of 85 cents per ton charge on pig iron as royalty on ore, coal and limestone entering into the manufacture. Add to this a freight rate of $4.31 per ton and (with low labor cost and low ocean freights for the foreign make) without the tariff the eastern, our natural market, is lost to southern manufacturers."

An Alabama manufacturer of pig iron which began producing metal in 1903 declared: "For the next four years our average cost and selling price was approximately $11 furnace. The company made absolutely nothing on the million dollars invested. We made some money during the remainder of 1907 on account of the high price of pig iron. We have just about been holding our own in the present market."

Mr. Butler, in another exhibit, presents translations of cablegrams received Dec. 3 to 10, 1908, wherein the following German and British costs are shown:

Average German Cost.

	U. S. Gold per ton of 2,240 pounds
Coke	$3.14
Ore, Lorraine district	0.48
Ore, foreign	2.42
Other German	0.97 to 1.2
Pig iron, Lorraine district	8.71
Pig iron, other	10.16

Average British Cost.

The costs of steel making pig iron in the Middlesbrough district, England, are as follows:

1 ton of Spanish ore	$2.53	
1¼ ton Cleveland ore, at $1.25	1.56	
		$4.09
1 1/10 ton coke at $3.77		4.14
½ ton stone		0.25
Other items		1.00
Total		$9.48

Ocean freight rates from European seaports to Boston, New York, Philadelphia and Baltimore on iron ore and pig iron are given at $1.60 per gross ton. The works referred to in the German costs as other than in the Lorraine district, include works in Luxembourg and Saar, Germany; Moselle, France, and Liege, Belgium.

A table showing comparative wages paid blast furnace employes in the United States and England is appended:

Blast Furnace Wages.

	United States.	England.
Furnace keeper	$2.90	$1.82
Top filler	2.55	1.27
Cinderman	2.30	1.21
Bottom filler	2.30	1.20
Laborer	1.65	0.91
Blast engineman	2.90	1.37

Comparative costs of foreign and domestic pig iron at the principal seacoast points in the United States are appended in another exhibit. One instance of this comparison shows that pig iron produced in eastern Pennsylvania plus freight is laid down in Philadelphia at $19.39; German pig iron plus freight and duty, at the same point, $15.21; English pig iron, plus freight and duty, at the same point, $15.93. Another instance shows that eastern Pennsylvania pig iron is delivered in San Francisco at $32.79; German pig iron, plus freight and duty, at the same point, $20.21; English pig iron, plus freight and duty, at the same point, $20.98.

"In conclusion," says Mr. Butler, in ending his brief, "I beg to say that in view of the enormous amount of capital invested in merchant blast furnaces of the United States, the very large number of men employed and the narrow margin of profit, it would seem to me that no change should be made in the pig iron schedule."

The annual report of the Monongahela River Consolidated Coal & Coke Co., Pittsburg, for the year ending Oct. 31, 1908, shows that a grand total of 6,096,100 tons of coal were mined, compared with 7,454,157 tons the previous year, or a loss of 1,358,047 tons. The surplus of the company Oct. 31 was $2,101,707.76 compared with $2,325,741.98 the corresponding date of the previous year.

MORE ACTIVITY

In Blast Furnace Operations in Susquehanna Valley Expected.

Harrisburg, Pa., Jan. 26.—Considerable additional furnace activity is in prospect for the lower Susquehanna valley counties in the spring and from present indications three stacks will be added to the active list soon. They will include Lochiel and No. 1 Paxton in Dauphin county, and No. 3 Pennsylvania steel or North Lebanon in Lebanon county. No. 2 Steelton and No. 2 Colebrook are two stacks which have gone into blast since the first of the year. Practically every one of the furnaces on the active list in 1905 has been repaired and is ready to start.

A prospective bar iron combination is arousing considerable interest in eastern Pennsylvania counties. A number of concerns are said to have agreed to join, but the details are not in shape to announce.

New Skelp Mill Opens.—The new plant of the A. M. Byers Co., Pittsburg, manufacturers of iron pipe, at Girard, O., was put in operation Jan. 25, when the fires were started in the 42 single puddling furnaces. The puddle department was running full by Wednesday, Jan. 27. The two heating furnaces and the skelp mill are not yet in operation, but will be started in about a week. The skelp from the new plant, which is a thoroughly modern one in every respect, will be shipped to the tube mills of the company in Pittsburg, where the finished pipe will be made. Allan Wood Smith, formerly of the Clearfield Steel & Iron Co., is superintendent of the new Works.

PERSONAL.

H. L. Williams, of the firm of Hickman, Williams & Co., Chicago, has left for a six weeks' tour of Mexico.

Thomas Lynch, president of the H. C. Frick Coke Co., has been added to the board of directors of the Union Trust Co., Pittsburg.

W. McGilvray Shiras has been appointed ore agent of the Carnegie Steel Co., succeeding D. G. Kerr, who resigned to become second vice president of the United States Steel Corporation. Mr. Shiras had formerly been associated with Mr. Kerr in his work.

P. T. Walton, formerly of Jacksonville, Ill., has been appointed general manager of the Structural Iron Works, Fargo, N. Dakota.

R. T. Rolfe, formerly associated with H. W. Rolfe in the Chicago office of B. Nicoll & Co., has been transferred to the New York office of that firm.

E. A. Rich Jr., formerly with the Scully Steel & Iron Co., Chicago, has succeeded F. C. Dennett as general manager of the Brown Specialty Machinery Co., Chicago.

Gustave A. Becker, who has been secretary of the Belleville Stove Works, Belleville, Mo., has severed his connection with the concern, and will devote his time to lumber interests.

Eaton Rhodes & Co., of Cincinnati, have moved into larger quarters at No. 1115 First National Bank building. The rooms were formerly the private offices of C. G. Blake of the C. G. Blake Coal Co.

L. C. Graton, heretofore connected with the United States Geological Survey, has been chosen secretary and statistician for a recently formed association of copper producing, refining and selling interests. Headquarters will be maintained in New York.

Theodore A. Gessler, New York, H. T. Bennett, Chicago, and O. J. Willis, St. Louis, have been appointed assistant managers of sales of these respective branch offices of the American Sheet & Tin Plate Co. and have assumed their new duties.

W. D. Patton, of Jeffersonville, Ind., formerly with Rogers-Brown & Co., has taken service with the Domhoff & Joyce Co., and will cover much of his old territory for this new connection, with headquarters at Cincinnati.

Carl M. Hoppe, manager of sales of the Republic Iron & Steel Co., at St. Paul, Minn., will move on Feb. 1 into larger quarters at 435 and 437 Endicott building, where a handsome suite of offices is being fitted up.

OBITUARIES.

H. Z. Wing, aged 63, general superintendent of the Producers & Refiners Oil Co., died suddenly Jan. 18 at Knoxville, Pa. He was prominent in pipe line operations and was well known to pipe manufacturers.

Elmore A. Barnes, aged 63, a well-known Pittsburg business man, who at one time was active in iron and steel circles, died Jan. 17 at Cambridge Springs, Pa. He was born at Rochester, Pa., and went to Pittsburg as a young man, entering the employ of Hussey, Howe & Co. He was superintendent of that company for 21 years and during a part of this time was a member and treasurer of the firm of Hussey, Binns & Co., shovel manufacturers. During the past 20 years Mr. Barnes had devoted himself to other lines of business.

William C. Stimpson, head instructor in forge and foundry work in the department of science and technology of Pratt Institute, Brooklyn, for several years, died at his home in Milford, Conn., Jan. 13. Beside being secretary of the American Foundrymen's Association, he was secretary of the School Crafts Club of New York, and an active member of the National Society for the Promotion of Industrial Education.

A. Kennedy Ashworth, aged 36, manager of the filter department and traveling engineer of the Pittsburg Gage & Supply Co., Pittsburg, died in that city Jan. 20, of typhoid fever. He had been active as a mechanical engineer for a number of years and enjoyed a widespread prominence as an authority on oil filtering systems. He had also devoted considerable attention to steam specialties. He was a member of the American Society of Mechanical Engineers, the Engineers' Society of Western Pennsylvania and other organizations.

Col. Joseph A. Andrews, president of the Andrews Steel Co. and senior member of the Newport Rolling Mill Co. and Globe Iron Roofing & Corrugating Co., of Newport, Ky., died on Tuesday morning, Jan. 26, at his residence in Newport. He had been ill for several months. Col. Andrews was born in Cincinnati, Nov. 2, 1839. During the civil war he was an orderly in Co. B, Guthrie Grays, Sixth Ohio volunteer infantry and later was promoted to captain. Annually since the close of the war the survivors of the Guthrie Grays have been the guests of Col. Andrews at a banquet. During the early 80's, he and his brother, A. L. Andrews, operated a roofing plant on Front street in Cincinnati, and some time after the failure of E. L. Harper they purchased what has since been known as the Newport rolling mill. Important improvements were made in both the buildings and machinery and the capacity of the plant was soon more than doubled. About three years ago, they conceived the idea of erecting a big steel plant on the Licking pike. Another company was organized known as the Andrews Steel Co. and work was begun on the new steel plant which was completed at an outlay of more than one million dollars. The steel plant has a capacity of 350 tons per day. The two plants employ over 1,000 men.

AMONG MACHINERY MAKERS.

NEW YORK.

With Exception of Few Lines, There is Little Activity.

Office of THE IRON TRADE REVIEW,
Room 1005, No. 90 West St., Jan. 26.

Aside from moderate activity in a few lines, the local machine tool trade is marking time. Reports as to the volume of inquiries are rather conflicting, certain interests finding these fairly numerous while others are meeting with very few; the net result, however, is the same in each instance, as practically no orders of importance are discovered. The only railroad order which has come to light recently is that of the New York Central for cranes, an inquiry which had been current for a long period and had been once withdrawn to change specifications to provide for alternating current. The order has been taken by the Niles-Bement-Pond Co., and calls for five traveling cranes for installation at the West Albany shops. A 30-ton traveler for the riveting tower at those shops went to Manning, Maxwell & Moore, Inc., some time ago.

Present indications are that at an early date the Philadelphia department of public works will advertise for bids for the construction of an additional filtration plant at the Queen Lane pumping station, to cost between $2,000,000 and $3,000,000. So far as possible, the equipment of the present pumping station will be utilized for filtration purposes.

The J. G. Brill Co., Philadelphia, has begun the work of repairing the damage occasioned by the recent fire at its plant. Contracts have been let for the construction of a large brick and concrete kiln, the cost to be about $15,000.

A. W. Richards, representative in Japan for Manning, Maxwell & Moore, Inc., left late last week for that country after having spent about three months visiting the factories of this interest in the United States.

The Purves Machinery & Iron Co., Philadelphia, has been taking figures on a small two-story warehouse, to be located at South and Swanson streets.

The trade is following with much interest the announcement that the 10-acre site on the Staten Island water front recently acquired by the Goldschmidt Detinning Co., is to be utilized for the erection of a plant capable of detinning 30,000 tons of tin scrap yearly. German plans will largely be utilized in this work. Dr. F. H. Hirschland, 60 Wall street, New York, has given out this information. It is probable that later on a plant will also be erected in the west.

The Crocker-Wheeler Co., Ampere, N. J., has secured the contract for about 60 motors, aggregating about 400 horsepower, for the equipment of the Esty Organ Co. plant at Brattleboro, Vt.

The Stephens-Adamson Mfg. Co., Aurora, Ill., has re-located its New York offices in the Hudson Terminal buildings, 50 Church street, in charge of William Reinecke, formerly with the Robins New Conveying Belt Co. Frank McWethy, for some time manager of the New York office, has returned to Aurora as assistant sales manager. Conveying and transmission machinery is manufactured.

PITTSBURG.

Conditions in the Machinery Market Are Not Satisfactory.

Office of THE IRON TRADE REVIEW,
510 Park Bldg., Jan. 26.

While, with some companies, there is a little more liberal contracting in rolling mill machinery and engines, the hesitancy shown by prospective buyers continues in evidence and conditions in the machinery market, generally considered, are not satisfactory. Some buyers have apparently made up their minds as to what may be expected in the way of tariff revision and are willing to discount the probable effect of this factor, but the usual belief held by machinery makers is that the doubt over this question is holding back a more rapid improvement. The tone of the market is undoubtedly better and prospects as gaged by the heavy estimating work are good, but it is a difficult matter to obtain orders to proceed with contemplated investments.

Power machinery is not moving very actively, as new construction in this district is quite limited and the attention of plant owners is being directed largely to those repairs which are found to be of actual necessity.

In connection with the extensive improvements which Spang, Chalfant & Co., Inc., Pittsburg, are making to their iron and tube works at Etna, Pa., four new induction drives of the Wheeling Mold & Foundry Co. are being installed on the welding furnaces. These drives avoid the use of either reversing motors or friction clutches.

The Mesta Machine Co. reports having recently closed a number of good contracts for rolling mill machinery and engines and expects its business during the month of January to show an increase over December.

R. Daae & Co., House building, Pittsburg, consulting engineers, have taken the agency for the Schild valve for open-hearth furnaces. Mr. Daae, of the firm, was formerly chief engineer of the Monterey Iron & Steel Works, Monterey, Mexico, and was associated in that plant with Mr. Schild, the inventor of the valve, which has been in use in the Monterey works for the past six years.

The H. C. Frick Coke Co. has closed with the Consolidated Mfg. & Supply Co., with offices at 320 Frick building, Pittsburg, for 56 Vance steam traps, which are to be installed at the four large new coke plants of the company now under construction, the Palmer, Ralph, Sarah and Filbert. The traps range in sizes from ½ to 1½ inches.

The Brady Light, Heat & Power Co., capitalized at $5,000, has taken out a Pennsylvania charter. Harry F. Amber, 1336 Walnut street, Philadelphia, is treasurer, and in addition to Mr. Amber, the directory board includes John C. Moore and Daniel McAlaine, both of Philadelphia.

Makers of rolling mill, steel works and auxiliary plant machinery are now devoting considerable attention to the mechanical requirements of the new West Penn Steel Co., which is to erect a new steel plant and finishing mills at Brackenridge, Pa. Figures have been taken on much of this equipment, and contracts are expected to be awarded soon, as it is hoped to have the plant in operation by fall.

The Western Coke Co., capitalized at $5,000, has been incorporated by Charles McKnight, president of the National Bank of Pennsylvania, R. H. Davis, Geo. H. Gerwig and John W. Boileau, all of Pittsburg, and Alexander Laughlin, of Sewickley. Mr. McKnight is treasurer. This company controls 1,000 acres of coking land located in Morgan and Jefferson townships in Greene county, which was recently purchased from J. V. Thompson, of Uniontown, Pa. It is planned to eventually construct coke ovens. The Bessemer Coke Co., Pitts-

burg, has recently started a new plant of 200 ovens in this district along Ten Mile creek.

MILWAUKEE.

Orders Gradually Increasing — Some New Enterprises.

Milwaukee, Wis., Jan. 25.—Milwaukee machinery manufacturers say that business has received some impetus since Jan. 1. Orders have been gradually increasing.

The Vilter Mfg. Co., builder of ice-making and refrigerating machinery, reports that contracts to the total of $250,000 have been received since the opening of the new year.

Officers, office staff, traveling salesmen and guests to the number of 35 were entertained at the recent annual banquet of the Milwaukee Corrugating Co.

The Concrete Steel Caisson Co. of Milwaukee has been incorporated with a capital stock of $130,000 by James Cavanaugh, Charles D. Barnes and John L. Wattles.

William Hess, president of the Manitowoc Steam Boiler Works at Manitowoc, Wis., upon his return to Manitowoc from California, has announced that he is no longer connected with the company. After the transfer of the plant of the Manitowoc Steam Boiler Works Co. to the Manitowoc Dry Dock Co. some months ago, Mr. Hess continued as manager of the plant until a short time ago, when he went to California.

The Marathon County Paper Mills Co. has been incorporated at Wausau, Wis., by Neal Brown, Karl Matjie and others, and a contract has been awarded to O'Keefe & Orbison, of Appleton, Wis., for the erection of a $1,500,000 paper mill plant. The plant will be located near Wausau, on the Wisconsin river, and will be constructed of concrete and iron. A power plant will be one of the first buildings erected.

At the annual meeting of the Chicago Pneumatic Tool Co. to be held Feb. 15, President J. W. Duntley will retire and take the presidency of the Duntley Mfg. Co., recently organized. He will be succeeded by his brother, W. O. Duntley, while J. R. McGinley, of Pittsburg, will succeed C. M. Schwab as chairman of the board.

The Swedish Iron & Steel Corporation's stockholders will elect directors Feb. 3 at 16 Exchange place, New York.

HOME INDUSTRY

Encouraged by the California Metal Trades Association.

(Special Correspondence.)

San Francisco, Cal., Jan. 21.—The California Metal Trades Association held its annual meeting and election last evening. The reports submitted by President Edward J. Fowler and Secretary Harry F. Davis, and by the committees, were quite interesting. H. W. Kerrigan, commissioner of the structural steel and ornamental iron branch of the association, submitted an exhaustive report, which reflects the condition of the local metal trades, in the past and present. President Fowler said in his report that the members of the California Metal Trades Association may look back upon 1908 as a period in which much effective work had been started. Labor difficulties, he said, are no longer of paramount importance, and the organization had succeeded in installing a better feeling between employer and employe. The action of the California metal trades was the first step towards the solution of the labor problem along conciliatory lines, and its outcome is watched by all employers' defense associations in the United States.

PRESIDENT J. M. ROBINSON.

Secretary Davis advocated the continuation of the campaign of patronizing home industry, to unite all manufacturers under that one banner. While the movement, he said, is still in its infancy, it has already achieved results and is taken up by employers in other lines.

The suggestion of Commissioner Kerrigan to hold an industrial fair in San Francisco, commencing April 18, 1909, the third anniversary of the great disaster which all but destroyed this great city, found favor with the association as the best means of advertising the manufacturing advantages offered in San Francisco.

Commissioner H. W. Kerrigan said, in part:

"Nine months ago conditions were such in San Francisco through the disorganization brought about by the earthquake and fire that the structural steel anl ornamental iron branch of this association found that out of nearly $200,000,000 spent for building in this city, $13,000,000 in iron and steel alone, that its members were securing only between 20 and 25 per cent in contracts Such a condition could not last without depleting the shops and causing cessation of business among our structural steel and ornamental iron firms, with the result that they put a man in the field through assessments from each member of the branch to see what could be accomplished to prevent the outgoing of steel and iron by a home industry campaign.

"Up to the present time, this branch has spent for this extra expense over $3,000, and the association about $500, part of this for salary and the rest for office supplies. In stamps alone nearly $100 has been spent for circularizing 10,000 letters to architects, contractors, property holders, city, county and state officials, and in fact to everyone who could be interested in the expenditure of money sent out of the city and the economics of keeping it here through home industry. Not only did we do that, but distributed 1,500 burnt clay products books advocating steel and brick to the detriment of concrete construction, this costing the various members of the branch for the book and distribution, $1,125. In addition to that, a delegate was sent to the last transcontinental freight bureau meeting at Chicago.

"It was a hard task to gain recognition at first for our campaign. Very little attention was paid by outsiders, news publications, or even our own members—the architects and contractors less than any. But by perseverance and application we continued the fight and the various publications began to see the logic of its purposes; then the commercial bodies took it up and advocated home protection through home industry, so gradually but surely our plants felt the influence of the strenuous efforts to secure business, and today we

can say truthfully that nearly all the plants are busy and have been for some time, although in many cases accepting jobs very low to force the eastern competitor out to keep the work here."

The following officers were elected: President, J. M. Robinson, Keystone Boiler Works; first vice president, Joseph J. Tynan, Union Iron Works Co.; second vice president, James W. Kerr, Steiger & Kern Stove & Foundry Co.; executive committee — R. H. Postlethwaite, Risdon Iron & Locomotive Works; Sam J. Eva, United Engineering Works; George J. Henry Jr., Pelton Water Wheel Co.; George A. Armes, Union Iron Works Co.; George A. Dow, Geo. E. Dow Pumping Engine Co.; Fred J. White, White Ornamental Iron Co.; William F. Murray, Murray Bros. Machine Works; Edward J. Fowler, Pacific Foundry Co.

RAILROADS PURCHASE

Locomotives and Plan More Rail Laying in Manitoba.

Toronto, Can., Jan. 22.—William Whyte, second vice president of the Canadian Pacific Railway, announces that the company will spend $6,000,000 this year in the construction of new lines west of Fort William. The lines to be built, including those commenced last year, will have a mileage of between 250 and 300 miles.

The Canadian Pacific railway has given a contract to the Montreal Locomotive Works for 30 engines of the standard Pacific type with 21 x 28 inch cylinders, 69 inch drivers, and a weight including tender of 215,000 pounds. The Grand Trunk Pacific has ordered from the same company 25 locomotives, with 18 x 24-inch cylinders, 69 inch drivers of the standard eight-wheel type of the "440" class, the total weight to be 121,000 pounds. Delivery of both these orders is to be in May. A large number of extra skilled mechanics are being taken on at the works.

The Manitoba Iron Works, Winnipeg, has decided to extend its plant on Logan avenue by an additional structure 450 by 130 feet, at a cost of $150,000, in order to enable it to handle large structural steel contracts. When this addition is made the capacity of the works will be 20,000 tons of steel per year, and the present force of 200 men will be largely increased.

An advance in rates on coal hauled to the lakes from Western Pennsylvania and West Virginia mines will be considered at a meeting of railroad managers called for Feb. 3 at Pittsburg.

INSURANCE PLAN

Proposed for Benefit of Employes by Buffalo Foundrymen.

The foundrymen's division of the Employers' Association of Buffalo is now the center of a good deal of interest as it has in hand a matter of widespread importance, bearing on the relation of the employer to the employe. A plan has been conceived to give the workmen employed by the association the most liberal proposition ever offered in the matter of insurance. For a considerable period a committee consisting of Lyman P. Hubbell, of the Fillmore

SECRETARY H. F. DAVIS.
Of the California Metal Trades Association.

Avenue Foundry & Iron Works; H. D. Miles, of the Buffalo Foundry & Machine Co.; F. R. Dunn, of the American District Steam Co., and John E. Gorss, secretary of the Employers' Association of Buffalo, has been working out this plan in the interest of the men employed by the foundrymen. The work that this committee has done is of the greatest importance and has developed a plan which will likely be adopted by many of the organizations, and on Feb. 2, the date fixed for the annual meeting of the Buffalo division, the report of the committee will without doubt be adopted and put into action at once.

A comparison of conditions existing between workmen and union indemnity systems and the offer the Buffalo association will make to the men is decidedly in favor of the latter plan and should work a great benefit to the employed and their families. It certainly demonstrates the friendly relations now existing between the association and the workmen. The foundries of the Buffalo district are now operated on an open shop basis almost entirely. The Buffalo organization will stand back of the new insurance plan and guarantee its success.

To receive benefits from the union indemnity fund, it is necessary for the individual to pay 40 cents per week and 25 cents additional four times per year or $21.80 per year. Under the foundrymen's plan, the premium will be fixed at $1 per month. The workman must also be a member of the union six months before any benefits will be paid and the amount of benefits is $5.25 per week, while the plan proposed pays accident benefits from date of policy, sickness benefits begin 60 days from date of policy and the amount of benefits per week ranges from $6.25 to $15, or an average of $8.50. The union indemnity pays for 13 weeks only in any year. The association will pay total sickness benefits for one year and partial for two years longer. Accident benefits will be paid for two years. The union system does not pay benefits for any fractional part of a week, but a member must be disabled for two whole weeks to be entitled to receive benefits. The new plan will provide benefit for a fractional part of a week. The union indemnity requires that the financial secretary be notified within one week of accident or sickness, and, to draw benefits, the individual must have been a member of the union for 12 months and not owe 13 weeks' dues. The new plan requires that notice be given of accident or sickness within ten days and death benefits will be effective from date of policy. The comparison of death benefits is as follows: Union indemnity, $100 to $200, total disability from $100 to $200 after belonging to union one year; association, accidental death benefits from $200 to $600, and natural death benefit $100, total disability benefits from $200 to $600. The employers will furnish free medical and surgical attendance.

A large number of requests have been made upon the Employers' Association of Buffalo for information.

ELECTRIC PLANT

For Smelting Iron Ore May be Installed in Mexico—Some Tariff Problems.

City of Mexico, Jan 21.—Plans are being considered for the installation for an electrical smelting plant for iron for the Altos Hornos Co., at Las Vegas, in the state of Vera Cruz. This property was developed by the Valentine El Core Co., of Mexico City, a few years ago, but was not found profitable to operate with fuel smelting. There is a large amount of water power available, and controlled by the company, and the ore is of good grade and cheaply mined. The conditions are generally favorable to a successful application of electrical smelting. Francisco Massillon is engineer for the company.

The plant for the manufacture of wire nails at Vera Cruz has not been successful, because of difficulty of securing wire. The supply of wire manufactured in Mexico is very limited and is not of the right gage, necessitating the purchase of wire abroad. The duty on wire, more than one millimeter in diameter, is $27.50, U. S. Cy., per ton. The duty on wire nails is 6 cents, U. S. Cy., per kilo, and nails are retailed at from 14 to 20 cents per kilo. Notwithstanding the high duty on wire, intended as a protective measure for the wire manufacturers, most of the wire used in the country is imported because the consumption does not justify a plant on a large scale.

The law permitting the president to grant exemption from duties, as an encouragement for new enterprises, has been extended by congress and much new equipment will continue to come into Mexico, free of duty.

Negotiations are still pending for the reorganization of the Durango Iron & Steel Co., which has been in the hands of the creditors for some time. A small plant is located at Durango, which has been idle for several years. The company owns the Cerro de Mercade deposit, at Durango, in which there is estimated to be no less than 600,000,000 tons of ore available.

K. T.

New Pattern Concern.—The Gobeille & Harris Pattern Co. has been organized at Niagara Falls by Joseph Leon Gobeille and William D. Harris. A building has been obtained and the new company will begin operations at once, giving special attention to designing and manufacturing patterns for stove foundries. A capable art department has been organized to make patterns for artistic metal work. A thorough study of molding machine practice will be made on account of the general interest being taken in the use of the molding machine in stove foundries. Mr. Gobeille has been long and favorably known as one of the leading patternmakers of the country, and, with a good shop, new tools and low costs, the new concern starts under favorable auspices.

DEATH OF C. H. BESLY.

Charles Howard Besly, whose death on Dec. 31 last was noted in THE IRON TRADE REVIEW of Jan. 7, was founder of the firm of Chas. H. Besly & Co., Chicago. He was born in Milwaukee, on June 16, 1852, and had been a resident of Chicago since 1863. He was educated in the high schools

CHARLES H. BESLY.

of that city and started his business career with Marshall Field & Co. In 1873, he became manager of the Bergen Tool Co., Batavia, Ill., and traveled extensively. He also was a broker of machinists' supplies and opened a small store on Lake street, near Clark, Chicago, in 1875. In 1881, the firm of Charles H. Besly & Co. was established at 175 Lake street, being composed of Charles H. Besly and David J. Kennedy. In 1886, Mr. Kennedy retired from the business and the business has since been conducted by Charles H. Besly. In 1891, the business was moved to 10 and 12 North Canal street, where it continued to grow until 1903, when it moved to its own building at 15-21 South Clinton street, where the business is now conducted. In 1886 the Beloit factory was established in a small way for the manufacture of die stocks. This business grew and later its specialties were developed, including Besly disc grinders, Helmet temper taps, etc. At the present time, it occupies its own buildings at Beloit, Wis. The business was left in a strong physical and financial condition. Charles H. Besly & Co., Chicago and Beloit, will be continued as heretofore, under the direction of Edward P. Welles, his nephew, who has been associated with the company for the past 22 years and since 1896 as general manager.

Equipping New Shops.—The Rockwell Furnace Co. has been awarded the contract covering the complete furnace equipment for the new locomotive shops of the D., L. & W. R. R. at Scranton, Pa. The furnace equipment consists of 35 of the latest type furnaces operated with 300 B. T. U. water gas, which is made in Loomis Pettibone producers. These shops will be capable of turning out complete locomotives, and are to be in operation in three months. They embody the latest and most improved machinery and equipment selected after thoroughly inspecting a large number of modern railway and industrial plants throughout the country.

Ohio Engineering Society.—The Ohio Engineering Society held its 30th annual convention at Columbus, O., last week and a number of instructive papers were read by engineers of the state. Among them was a paper by Wilbur J. Watson, consulting engineer of Cleveland, on "An Economical Long Span Reinforced Concrete Highway Bridge;" by W. H. W. Jenkins, surveyor and civil engineer of Portsmouth, "Tables of Short Radius Curves;" by R. H. Simpson, assistant city engineer of Columbus, "Grade Crossing Elimination in Columbus," and by various engineers on the municipal public service plants of Columbus.

The following officers were elected at the annual meeting of the stockholders of the Portland Foundry & Machine Co., Portland, Ind: President, J. A. Long; vice president, W. A. Field; secretary, Fred Grumm; treasurer, L. H. Holme; John Esterday and George H. Smith. President Long's report for the year and a half since the company was organized, showed a steady growth. An issue of additional stock was subscribed before the close of the meeting.

THE MAHONING VALLEY AS AN IRON CENTER

SHEETS AND TIN PLATE SUPPLANT IRON CUT NAILS

Tin Plate First Successfully Manufactured in Valley at Niles, Birthplace of William McKinley—Natural Gas Used in the Larger Rolling Mills Until Supply Proved Unreliable

By Joseph F. Froggett.

(A sketch of solely the pioneer history of the Mahoning Valley from 1808 onward, including the building of the first blast furnaces, rolling mills, etc., up to Civil war times, was published last week.—Ed.)

II. DEVELOPMENT.

Exciting War Time Boom.

A stern struggle for existance was forced upon these pioneer ironmasters by the troublous days immediately preceding and at the outbreak of the war of 1861-65. But after both the north and the south had become convinced that the struggle would end only after a long and determined fight, the material furnished by furnaces and mills came into first importance. Selling prices soared to heights never since attained by like materials in this country. In February, 1863, bar iron sold at $95.20 a ton. Puddlers were paid wages at the rate of $5.50 a ton, and heaters and rollers 70 cents a ton. In December of that year, bar iron had risen to $123.20 a ton; puddlers' wages to $6.58 a ton; and rollers and heaters were paid 90 cents. The boom grew until December, 1864, the record-breaking price of $168 a ton was established for bar iron. At the same time, puddlers were paid $9 a ton, heaters and rollers $1.25 a ton. "Boss nailers" in charge of cut nail machines, got $25 a day. Such extraordinary wages were never paid before or since in the iron business in the United States. Nor did puddlers' wages settle down to the $5 base until in June, 1876.

In 1863 the Enterprise mill in the western part of the city of Youngstown, the nucleus about which was later gathered the hoop and cotton tie manufactory of the valley, was built by Shedd, Clark & Co. The firm name was later changed to Shedd, Cartwright & Co. when James Cartwright entered the partnership. In 1864 the Russia sheet mills at Niles, O., were built by James Ward & Co., the first plant in the valley to manufacture iron sheets. The next year Harris, Blackford & Co. built a muck bar and sheet iron mill at Niles, which in 1872 was sold at receiver's sale to L. G. Andrews of the firm of Andrews Bros., was rebuilt and operated in Mr. Andrews' name. The Niles Iron Co. was incorporated in 1873 to take over this rolling mill property and it was continued under this name with L. G. Andrews president and L. E. Cochran secretary and treasurer until 1883. In 1881 the Niles Iron Co. commenced the removal of its rolling mill to Haselton on lands near the Andrews Bros. blast furnace plant, the removal being completed in 1882. Early in 1883, the Andrews Bros. Co., an Ohio corporation, was organized to take over the properties of Andrews Bros., the Niles Iron Co. and Andrews Bros. & Co., the latter a partnership formed for the purpose of general mechandising in connection with the works and mines of Andrews Bros. The officers of the new corporation were: President and treasurer, Lucius E. Cochran; vice president, James Neilson; treasurer, Henry W. Heedy.

John Stambaugh Sr.

Upon whose shoulders fell largely the mantle of Gov. Tod.

The Girard Iron Co. in 1866 built a blast furnace of 25 tons daily capacity at Girard, O., about three miles west of the Brier Hill stacks. The company included Gov. David Tod, William Ward, William Richards and Joseph G. Butler Jr., with Mr. Butler as financial agent. The following year the first blast furnace was built at Haselton, O., two miles east of the then city of Youngstown, by Andrews Bros., including Chauncey H., Lawrence G. and Wallace C. Andrews. It was designed to smelt native ores with the raw coal mined on the lands of William P. and Abram Powers.

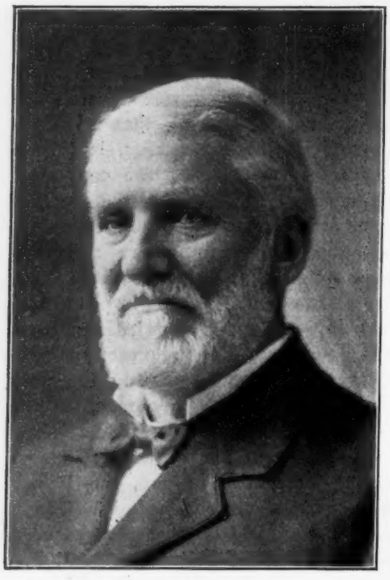
Stood for Progress.

Up to this time, C. H. Andrews, whose name is linked inseparably with the later progress of the Mahoning valley, as is also that of Governor Tod with the earlier, had been occupied in developing the coal mining industry. Henceforward he became one of the most active leaders in valley iron manufacture and railroad building until his death in 1893, at Youngstown. Also in 1866 in company with William J. Hitchcock, who has ever been regarded as one of the men likewise largely responsible for the early development of the valley, he built the first stack at Hubbard, O., five miles north of Youngstown. In that year, too, the Falcon Iron & Nail Co, president, John Stambaugh, and secretary and treasurer, Myron I. Arms, built a cut nail and guide iron mill at Niles, O. The demand for nails had become heavy, especially from the rapidly building west and almost all mills in the valley had nail factories attached, as later they attached sheet mills, hoop mills, etc., until competition forced economies upon them and brought about specialization along definite lines of exclusive product.

The second stack of the Andrews Bros. was built in 1868 at Haselton; in 1869 the Struthers furnace by members of the Struthers and Stewart families; in 1870 the Kitty stack was constructed at Niles by William Ward and by him operated until 1873; and the Warren stack at Warren, O., by William Richards & Sons, of whom one was S. A. Richards. This Warren stack was badly damaged by fire in 1878 and never was rebuilt. A small rolling mill was built also at Warren in 1870 by C. Westlake

& Co. It, too, was destroyed in the fire of 1878, but was rebuilt in 1879.

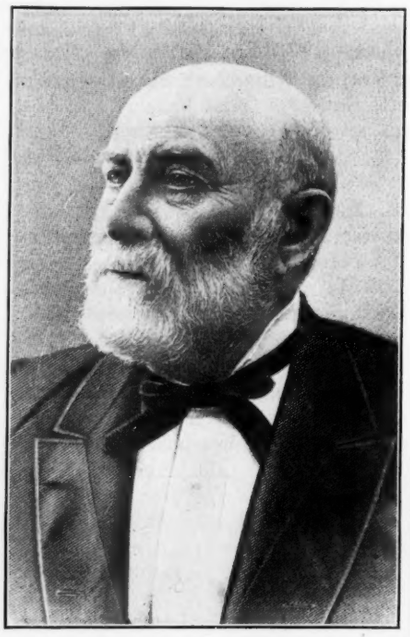
The Niles furnace as originally built by Ward used "blackband" ore and raw coal, both mined at Mineral Ridge not far from Niles. It was 56 feet high and had a daily capacity of 25 tons. After several years of idleness following its blowing out in 1873, the plant was purchased by John R. Thomas. He operated it but a short time with its original equipment of single blowing engines, cylinder boilers and cast pipe stoves or "hot blast" as then known. Progressive in adopting modern improvements, Mr Thomas practically rebuilt the stack, raising it to 76 feet. For ten years W. Aubrey Thomas, now representing the Nineteenth Ohio district in Con-



JOHN I. WILLIAMS.
For many years general manager of the Brown-Bonnell Iron Co.

gress, was associated with his father in operating the furnace, being chemist for two years and afterward general superintendent. John R. Thomas died Jan., 1898, and in May of that year the furnace was sold by his estate to the National Steel Co., and is now owned by the Carnegie Steel Co.

The Struthers stack, after passing through the possession of several companies, was purchased from the Brown-Bonnell Iron Co. in the latter part of 1895 by the Struthers Furnace Co., its present owners. The officers of the company then were: President, W. C. Runyon; vice president and treasurer, J. B. Stubbs; secretary, A. Grossman; manager, S. A. Richards. Extensive improvements have since been made to the plant and a cement plant was added several years ago. The officers now are: President, W.



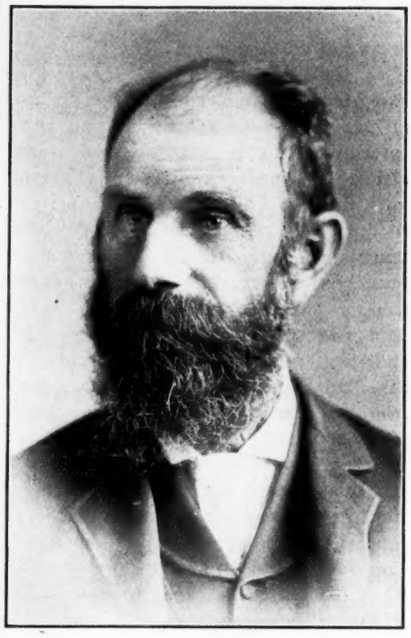
CHAUNCEY H. ANDREWS.
Closely identified with the Valley's later development.

C. Runyon; vice president, George L. Fairbank; secretary and treasurer, A. Grossman; manager, S. A. Richards.

Another event of the year 1870 bearing directly upon the development of the hoop and band iron industry

LUCIUS E. COCHRAN.
President of the Youngstown Iron & Steel Roofing Co.

of the valley was the formation of the firm of Cartwright, McCurdy & Co., with these officers: President, James Cartwright; vice president and treasurer, William McCurdy; secretary, Alexander Adams. The new firm took over the Enterprise mills and began putting out in quantity hoops, bands and cotton ties. In 1871 the Youngstown Rolling Mill Co., E. C. Wells manager, built a small hoop mill west of the Enterprise plant. This mill was burned and rebuilt in 1877, when Paul Wick was president and Henry Wick secretary. In 1872 the Girard rolling mill was constructed at Girard, O., which as the Corns Iron Co. had these officers: President, John Stambaugh; secretary, A. J. McCartney; treas-



JOB FROGGETT.
Blast furnace manager for quarter of century for Brown-Bonnell Iron Co.

urer, Nelson Crandall; manager, Joseph Corns. Another rolling mill was built in 1872, the Hubbard, O., mill, by Jesse Hall & Son, a small merchant bar mill, which met with indifferent success.

Rail Mill's Short History.

Railroad building throughout the country had at this time reached a heretofore unparalleled stage and the demand for iron rails had gone far beyond the supply. Col. Caleb B. Wick and associates believed they saw a promising opportunity for investment and built the Valley mill, along Crab creek in Youngstown, in 1873, for the purpose of rolling iron rails. But the historic panic following

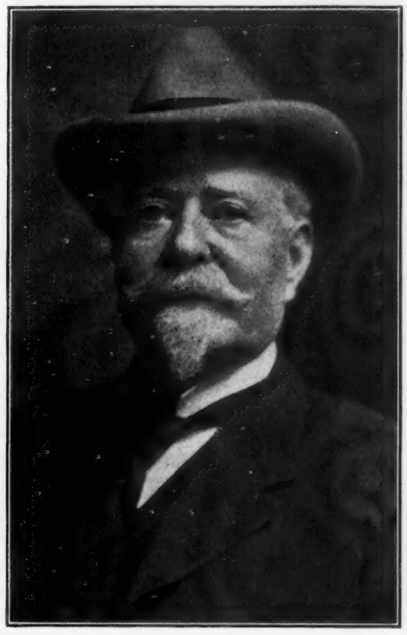
shortly dropped the price of rails from $95 a ton to $45 and this mill never rolled any more rails after 1875. It was finally reorganized as Wick, Ridgway & Co., later passing into the hands of Richard Brown and becoming the nucleus of the Mahoning Valley works of the Republic Iron & Steel Co.

The incorporation of the partnership of Brown & Bonnell in September, 1875, as Brown, Bonnell & Co., led to Joseph H. Brown withdrawing and the next year building a mill and starting the construction of a blast furnace in South Chicago, as the Joseph H. Brown Iron & Steel Co. Selling offices and warehouses had been maintained by the Youngstown firm in Chicago that early, it being

W. Scott Bonnell.
Formerly secretary of the Mahoning Valley Iron Co.

one of the best selling points for iron products in the country. In 1877 Cartwright, McCurdy & Co. became incorporated. In the meantime it had taken over the old Eagle furnace, which had these officers: President, W. H. McCurdy; vice president, W. B. Hazeltine; secretary and treasurer, W. E. Taylor.

The dissolution of the original partners in Brown, Bonnell & Co. took place Jan. 22, 1879, Herbert C. Ayer coming into control of a majority of the stock. After a long legal contest with Ayer, Richard Brown retired. Puddling mills Nos. 3 and 4, together with a number of finishing mills, were added to the original plant, and it became one of the very largest merchant bar mills in the country. The officers at this time were: President, Charles L. Rhodes; vice president and treasurer, F. H. Mathews; secretary, L. D. Phillips. In 1880 Richard Brown took over the Valley mill at Crab creek, removing to the plant the old Elizabeth stack from Niles. In that year the Girard rolling mill had these officers: President, Henry Wick; secretary and general manager, Myron C. Wick. In 1881-2, Summers Bros. & Co., George Summers Sr., general manager, built



S. A. Richards.
Manager of the Struthers Furnace Co.'s plant.

at Struthers, O., five miles east of Youngstown, a sheet mill with a capacity of nine tons of sheets daily. After a number of official changes, William Summers became president, H. Paterson, vice president, and S. Summers secretary and treasurer, in 1888. Taken over by the Struthers Iron & Steel Co., Jonathan Warner president, the mills were entirely rebuilt in 1895, and a galvanizing plant was added. After a fire in 1899, the mills were rebuilt on a larger scale and sold to the American Sheet Steel Co., in April, 1900.

Mr. Warner was chosen assistant superintendent of the American Sheet Steel Co.'s mills and in 1900 was made general manager which position he held until 1905. At that time the plant of the Empire Iron & Steel Co. and the Sheet Metal Mfg. Co., both at Niles, were purchased by him, enlarged and improved. He is president of the company, W. T. Hardesty, vice president and Jacob D. Waddell secretary and treasurer. The Empire Iron & Steel Co. built in 1902 a specialized steel sheet mill. Its first officers were: President, treasurer and selling agent, Wade A. Taylor; vice president and manager, Charles S. Thomas; secretary, John F. O'Dea.

William Turner built in 1876 a spike works known later as the "Grasshopper mill" near the Valley mill. In 1880, it had passed to Wick, Arms & Co., and finally to the Arms, Bell & Co., which had these officers: President and treasurer, Frank B. Williams; vice president, Joseph B. Wilder; secretary, William H. Wick. Its product was worked up into nuts and bolts. The plant was destroyed by fire in January, 1886, and never rebuilt.

By the year 1882 the Brown, Bon-

Henry O. Bonnell.
Former president of the Mahoning Valley Iron Co., now deceased.

nell & Co. had reached its maximum cut nail capacity, with 50 machines, and it had these officers: President, H. C. Ayer; vice president and treasurer, F. H. Mathews; and secretary, A. W. Jones. It had leased the Struthers blast furnace which had been rebuilt in 1881. The following year witnessed the financial embarrassment of Ayer, and the Brown, Bonnell Iron Co. passed out of his hands. The next year the Valley plant was bought by the Mahoning Valley Iron Co., composed of Cleveland, Brown & Co., and Bonnell, Botsford & Co. Fayette Brown had been appointed by the court receiver of Brown, Bonnell & Co., with D. B. Chambers as receiver's agent, later

succeeded by John F. Taylor, and he retained John I. Williams as general manager, who installed new ideas in heating furnace and rolling practice. In the meantime, the lease on the Struthers stack had been surrendered.

Steel Hoop Development.

In 1884 the mills of Cartwright, McCurdy & Co. had passed into the hands of creditors, a satisfactory scheme having been evolved by which a committee of creditors took charge. This committee consisted of Myron C. Wick, Henry O. Bonnell, J. C. Morse, of Cleveland, George Kelly of Sharpsville, Pa., and others. James Cartwight went to Steubenville, O., where he became president of the

MYRON C. WICK.
Formerly president of the Union Iron & Steel Co.

Cartwright Iron & Steel Co. Mr. Wick, who in later years became the president of the company, was in active charge of the plant, and with the assistance of W. E. Taylor, secretary and treasurer, with others upon the creditors' committee, and by untiring and persistent effort was enabled to place the institution upon its feet again. Six years after the creditors' committee had taken charge, Cartwright, McCurdy & Co. purchased the Pomeroy, O., mill in January, 1890, and in July, 1895, a separate corporation was formed for the Pomeroy plant known as the Pomeroy Iron & Steel Co.

Myron C. Wick, after acting as the head of the creditors' committee, became president of Cartwright, McCurdy & Co., and in the early part of 1892 there was effected a consolidation of a number of the interests in the valley into a new corporation known as the Union Iron & Steel Co., of which Myron C. Wick became the president. Without going into detail it may be stated generally that this consolidation, which resulted in the Union Iron & Steel Co., included Cartwright, McCurdy & Co. and the Youngstown Iron & Steel Co; the latter institution included the Youngs-

JOHN F. TAYLOR.
Formerly treasurer of the Republic Iron & Steel Co.

town Rolling Mill Co., which carried with it the Girard and Warren mills. With the latter company was connected George D. Wick, a brother of Myron C. Wick, both of them being members of a family which has been long interested in the development of the iron and steel interests of the valley.

From its incorporation in 1892, the Union Iron & Steel Co. developed successfully, from year to year, until the time of the great consolidations which ultimately led to the present United States Steel Corporation. Through this period the operation was in charge of Myron C. Wick, W. E. Taylor, now of La Porte, Ind., George D. Wick and others. Finally the Union properties were sold to the National Steel Co., as of Feb. 1, 1899, and on April 15, 1899, the properties were sold by the National Steel Co. to the American Steel Hoop Co., which, three years later, in turn disposed of the properties to the Carnegie Steel Co., which is the present operating corporation. Milton Coombs was the Carnegie Co.'s first valley district manager of the steel hoop mills, that office having been efficiently discharged by F. B. Baugh since 1904 as superintendent, with Thomas McDonald as general superintendent. Meanwhile the Pomeroy Iron & Steel Co., which was organized in 1895 and of which George D. Wick became the head, was optioned to the American Steel Hoop Co., and was sold to that company in 1899.

Of the men who were in active charge of the business prior to the sale to the great corporations, Myron C. Wick and George D. Wick are now retired from active connection with the iron and steel industry. They are, however, stockholders and directors in many of the steel and iron properties of the Mahoning val-

WILLIAM E. TAYLOR.
Formerly secretary-treasurer of Cartwright, McCurdy & Co.

ley, and are still interested in the technical development of the industry. Mr. Taylor is in active business at La Porte, Ind.

Used Natural Gas.

Natural gas, obtained by piping the fuel a long distance from western Pennsylvania, came into general use in 1888, at the Brown-Bonnell, Haselton, Cartwright-McCurdy, and the Mahoning Valley mills; but by 1890 the supply was found so variable and its cost so high that its use in the mills was discontinued. In 1888 the Mahoning Valley Iron Co., which then had these officers: President, H. O. Bonnell; vice president, Richard Brown; secretary, W. Scott Bonnell, and treasurer, James L. Botsford, had taken over the Hubbard, O., mill,

and had later leased it to the Hubbard Co-operative Iron Co., with William F. Bonnell as president. This was the only co-operative iron manufacturing movement of any size in the Mahoning valley. The Hubbard works were dismantled in 1898 by the Mahoning Valley company. In 1886, the

JONATHAN WARNER.
President of the Empire Iron & Steel Co.

Russia sheet mills in Niles had been taken over by the Falcon Iron & Nail Co., having these officers: President, John Stambaugh; vice president, Warner Arms; secretary-treasurer, Myron I. Arms. In 1890, Receiver Fayette Brown had succeeded in paying off a large proportion of the debts of Brown, Bonnell & Co., and a reorganization followed, with the selection of these officers: President, Samuel Mather; vice president, Robert McCurdy; treasurer, John F. Taylor; secretary, E. P. Williams; and general manager, John I. Williams. The nail factory had been abandoned, the advent of wire nails and a long contested nailer's strike having proved disastrous to the cut nail industry of the country.

With the passing of the cut nail industry from the valley came the advent of another, the tin plate manufacture. This was the natural outgrowth of the earlier iron and later steel sheet industry which had been making gradual progress all these years. The specialized sheet mills, such as the Falcon Iron & Nail Co., (which by this time had become more or less a misnomer as to name) were the first to take up the production of tin and terne plates following the enactment of the specially protective tin plate clauses of the McKinley tariff law. It was peculiarly appropriate that the city of Niles, the birthplace of William McKinley, should have been the site of the first and largest tin plate establishment in the Mahoning valley. In 1892-3, the Falcon Tin Plate & Sheet Co., whose officers were identical with the Falcon Iron & Nail Co., (president, Warner Arms; vice president, Tod Ford; secretary and treasurer, Myron I. Arms) with the addition of W. DeP. Knowlton as secretary, built at Niles a sheet plant with a product specially rolled and pickled in preparation for tinning. In 1895, the Falcon company built a tin plate plant at Niles, and in March of that year produced its first tin and terne plate. The original Falcon works were sold to the American Tin Plate Co., in which Warner Arms became first

W. AUBREY THOMAS.
President of the Niles Iron & Steel Co.

vice president, director and a member of the executive committee, but retired when the tin plate concern was merged ino the American Sheet & Tin Plate Co.

(To be continued next week.)

AMALGAMATION

Of Engine Building Firms in England is Proposed—Wicked Strike.

Office of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,
Birmingham, Eng., Jan. 16.

The most interesting event of the week is the announcement by Sir Christopher Furness, M. P., at a meeting of Richardson, Westgarth & Co., Ltd., of the proposal to amalgamate several engine building firms on the coast. Sir Christopher holds very strongly that this is the only way in which the shipbuilding industry generally and engine building in particular can be saved. He complained with great bitterness that their efforts had been ruthlessly upset by one of the most ill-advised and calamitous, indeed wicked, strikes on record. For that strike there was no justification whatever, and it was blindly persisted in notwithstanding many friendly efforts including those of a cabinet minister and the men's leaders. Sir Christopher explained that they intended to replace all antiquated tools, to put an end to overtime by dividing the work amongst the various shops, and allowing each shop to specialize on a kind of work for which it was best suited. The meeting was adjourned for a further report on the result of the negotiations.

The wages of the Welsh iron and steel workers have been reduced 5½ per cent from Jan. 1.

The Clyde shipbuilding returns for the year show the greatest falling off for 20 years. The vessels launched numbered 569 of the aggregate tonnage of 355,000 against 526 vessels in the previous year of 620,000 tons. There are now under construction 307,000 tons against 315,000 a year ago. Of this the bulk is British naval work to the value of £2,500,000 sterling.

The complete shipbuilding returns for the year total 973,000 tons as against 1,800,000 tons in 1907, and 2,000,000 tons in 1906. Last year's record was the lowest since 1893 when only 878,000 tons was launched. The shipyard which can boast the largest individual increase is that of Harland & Wolff, Ltd.

At a recent meeting of the board of the Lake Superior Corporation, James Hay, of Philadelphia, and Thomas Gibson, of Toronto, resigned and were succeeded by W. K. Wigham, of London, and Walter Gow, of Toronto. Other changes will likely be made on the board before long.

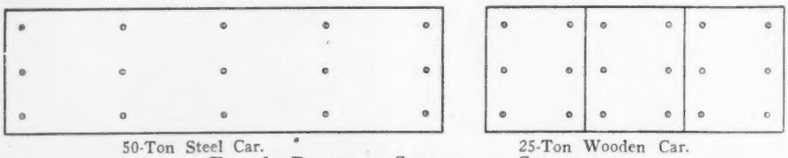
The annual meeting of the Nicholson File Co. will be held at Providence, R. I., Feb. 10.

METHODS OF SAMPLING IRON ORE[1]

The Systems of Commercial Sampling as Adopted by the United States Steel Corporation and Described in a Booklet Issued by It

By J. M. Camp.

Owing to the varying conditions under which iron ores must be sampled, both by the producer and the consumer, variations from any uniform procedure of sampling are necessitated. The elements of time, size of shipment, kind of ore and other considerations are determining factors in the details of procuring the sample. Hence it is the purpose to render the following methods general in their scope, promulgating those ideas applicable in the broader sense to ore sampling, without attempting to prescribe for every varying and unforseen contingency in the details.



50-Ton Steel Car. 25-Ton Wooden Car.

Fig. 1—Parallel System of Sampling.

Car Sampling at Producer's End.

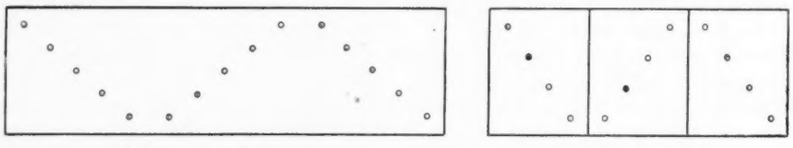
All samples must be taken uniformly over the surface of the cars after being loaded by taking a minimum of 12 places for wooden, and 15 places for steel cars, by either the parallel or the zigzag system. The following diagrams illustrate these two systems and show the minimum number of points where samples are to be taken.

When lumps of ore are encountered at the designated points where samples are to be taken, small portions of each lump must be chipped off, about equal in size to the first joint of the thumb. When rock occurs, it must also be sampled as ore, that is, a proportionate amount of the rock or off grade material is to be taken, not equal in amount to the regular sample for the area covered by that point, unless the entire area is such off grade material. Then the same amount of adjacent material must be taken, ore or rock, equal in amount to the portion taken at each regular point. This also applies to field boulders, unless thrown from cars.

The samples are taken with a garden trowel. Each 10 cars, either steel or wooden, must be combined, as a rule, into one sample; but less than 10 cars may be grouped. The weight of the sample must not run under 15 pounds for 10 wooden, and 20 pounds for 10 steel cars.

Whenever very lumpy ore is to be sampled in the cars, the rope net system is used, as shown below, which gives about 32 places on each car, the knot being 18 inches apart. In using the net system, if a lump of ore or rock comes directly under a knot, a piece should be taken about the size of the first joint of the thumb. If fine ore occurs under a knot, an equal amount is taken with the trowel. The rope net system is used at the Marquette range on the hard, lump ore; also at the Soudan mine, Vermillion range.

A moisture sample must be taken for each train load from all open pit mines; a train consists of 40 to 45 of the 50-ton steel cars, or 60 to 68 of the 25-ton wooden cars. A moisture sample must also be taken for all the cars loaded at a shaft or stockpile during each 10-hour shift. Samples must be taken from three places on top of each car, as shown by the following diagram.



50-Ton Steel Car. 25-Ton Wooden Car.

Fig. 2—Zigzag System of Sampling.

Care should be taken to secure the sample from well underneath the surface as soon as practicable after loading, maintaining the true proportion of lump and fine ore. The sample, as taken, must be immediately placed in a can with a tightly fitting lid, and brought to the crusher house. It is optional to take a moisture sample from the regular sample, provided it has been taken from well underneath the surface.

Cargo Sampling at Consumer's End.

Cargo ores present the most serious obstacles to a uniform method of sampling. The boats vary in size from 3,000 to 12,000 tons, with one or two decks, and in the number of hatches from six to 36, with widths varying from 12 to 24 feet. The grabs at the different unloading points vary in number, kind, size and the rapidity of their operation. The ores vary from the very fine to the all lump, from the so-called mixed ores, such as the groups to the mixed cargoes, consisting of different ores in the same boat, and with different ways of loading the boats.

Grab Sampling.

An excellent method of cargo sampling where the entire cargo will be represented, and particularly adaptable for fine ores, is called grab sampling. A sampler with a small scoop attached to a handle of suitable length and holding a definite amount of ore, a quarter, a half, or a whole pound, takes a scoopful from each grab as it rises above the deck. The disadvantage of this system is its increased cost, due to the extra number of samplers, one being required for each grab during the entire time of unloading.

The general plan for the sampling of all cargoes is to first sample the tops of the piles, before the grabs have started to unload; this is called sampling of the cones. After the grab has removed from the hatch all the ore within reach, the exposed faces standing on each side are sampled; this method is known as face sampling. Or when the latter practice is impracticable, owing to the operation of the grabs, then the method of rounds is followed.

In sampling, a small shovel or garden trowel is used, the total length of which, including the handle, is 12

[1]Copyright, 1908, by J. M. Camp, chemist Duquesne Steel Works of the Carnegie Steel Co.

inches, and it also constitutes a measure. It is the aim to take equal-sized samples from each of the points selected. When lump ore or rock is encountered at the point determined by the measure, a portion is broken off equal to the amount regularly taken.

In the sampling of the cones, at a point midway between the side and center of the boat, directly under the edge of the hatch, the first sample is taken and sampling continued one

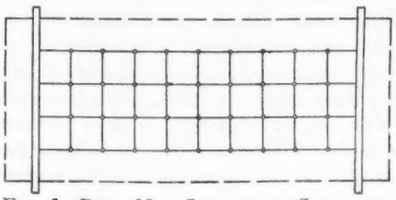


FIG. 3—ROPE NET SYSTEM OF SAMPLING.

shovel length apart up the surface of the cone, over its apex and down the opposite surface to a corresponding point under the other edge of the hatch. This line is crossed from corresponding opposite points under the hatch, as shown in the following sketch. Not more than one-tenth of the total sample is to be taken in the sampling of the cone.

Face Sampling.

After a grab has removed from a hatch all the ore within reach and has moved to another hatch, the sampler shall measure two shovel lengths from the side of the boat and start up the exposed face of the ore, taking samples one shovel length apart all the way to the top, using a ladder if necessary. The next vertical line is measured four shovel lengths from the first and the samples taken each shovel length apart on this line, as before, and so on for each succeeding line across the boat. This is repeated on the opposite ore face, and the en-

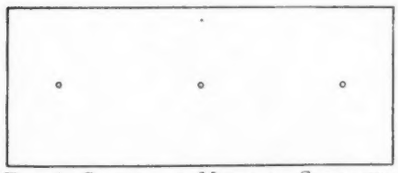


FIG. 4—SYSTEM OF MOISTURE SAMPLING.

tire procedure continued until the ore faces of all the hatches are sampled that the character of the boat and the operation of the grabs will permit. When a bulkhead occurs, only the face opposite to it is to be sampled.

Round Sampling.

When the operation of the grabs makes sampling by the face method impracticable, or with boats having 24-foot hatch centers, and decks furnishing protection to the samplers, then sampling shall be done while the ore is being removed by the grabs. When five or six feet of the face of the ore have been exposed, the sampler shall enter the hatch and measuring two shovel lengths from the side

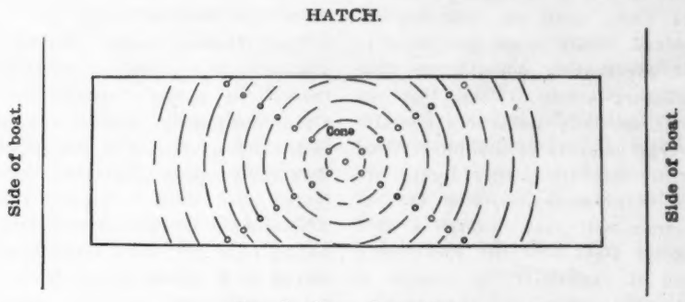


FIG. 5—CONE SAMPLING.

of the boat or edge of the face, take successive samples up the face one shovel length apart. The next vertical line is measured four shovel lengths from the first, and samples are taken all the way to the top, as before, and so on across the entire face of the ore. This procedure is repeated on the opposite face, one-third of the total weight of the sample to be taken in the first round. When all the ore within reach of the grab is removed, the second round is taken, using the measurements as above, and the remaining two-thirds of the sample are secured.

Part of the regular sample is to be taken for the moisture sample, and for the fineness sample, when such is desired.

Car Sampling at Consumer's End.

When the ore is received in cars, the greatest possible number are represented in the samples, and not less than 10 equal-sized samples are taken from each car. When cars are loaded with fine ore with the piles in opposite ends, at least five samples are taken from each pile, the first one at the apex of the pile, and the other four at points symmetrically arranged around the sides of the pile, two-thirds of the distance from the apex to the base of the pile or sides of the car. With cars loaded in the center, the system is the same, except that the center of the side of the pile lengthwise of the car is the first point, the other four being symmetrically arranged around this point.

When the 10 points are located in a car, each of them is supposed to represent a definite area, equal to one-tenth of the ore surface of the car. If the car contains all fine ore, then 10 equal-sized samples are taken, one from each of the points. If the car contains a mixture of fine and lump ore, with varying amounts of each in the areas included in the different divisions, then each area is judged separately and sampled accordingly. The fine and lump ore are taken each in its proper proportion, the former with the trowel, the latter being chipped, or selected small pieces being taken, each about the size of the first joint of the thumb. The combined sample of fine, chipped and selected pieces from each area equals the amount taken were it all fine ore. If the contents of the car are all lump ore, the proper-sized pieces are chipped from four or five of the lumps in each of the 10 areas, making 40 or 50 pieces from each car, the total amount of chipped pieces from each of the areas equaling the amount that would be taken were it all fine ore. All samples of fine ore are taken from well underneath the surface to obtain the ore in its natural state.

A proportionate amount of the main sample is retained in a tightly closed can for the moisture determination.

Preparation of Samples in General.

In the preparation of the sample for analysis, the ideal practice is to crush and quarter alternately until the de-

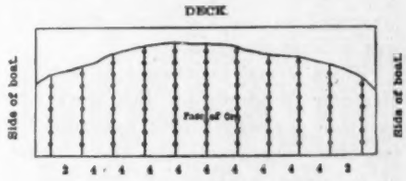


FIG. 6—FACE SAMPLING.

sired qauntity with the requisite degree of fineness is attained. A more expeditious and equally efficient method is to crush the entire sample to the desired degree of comminution, then reduce the quantity by successive quartering as before, until the desired amount remains. It should ever be the purpose to approach as closely as

possible to either of these two methods in the preparation of all samples for analysis.

Preparation of Sample at Producer's End.

Samples before being quartered are brought into the crusher house where they are dried, if necessary, at 100 degrees Cent. until the ore can be well mixed. Care must be taken to prevent overheating when other than low pressure steam is used for the purpose, especially with ores containing a large quantity of limonite. When sufficiently dry the larger lumps are crushed, if necessary, so that the entire sample will pass through a half-inch mesh sieve; a finer sieve may be used if desired. The sample is thoroughly mixed on an iron top table, then spread out evenly about three-fourths of an inch in depth and alternately quartered and mixed until one-fourth of the original sample remains. It is now crushed until fine enough to pass a ¼-inch sieve, then mixed and quartered as before until about two pounds remain. It is again crushed until fine enough to pass a 20-mesh sieve, and spread out evenly about three-eighths of an inch in depth. About three ounces of this is taken from all over the pile, with a small spatula, dried in a small pan at 100 degrees Cent. and crushed on a chrome steel plate, until it will all pass through a 100-mesh sieve. After being thoroughly mixed, this is transferred to a bottle, and constitutes the sample for analysis.

The following method for the preparation of the sample is optional. All the ore is passed through a ½-inch sieve, thoroughly mixed on a suitable cloth and quartered in the usual way, diagonally opposite portions being rejected until about five pounds remain. The sample is again crushed, if need be, to pass a ¼-inch mesh sieve, and mixed and quartered as before until one and one-half to two pounds remain. After being dried at 100 degrees Cent. for 20 to 30 minutes, it is crushed to a fineness of 20 mesh, mixed and quartered until about three ounces remain, and the entire sample is crushed on a chrome steel plate and passed through a 100-mesh sieve. This sample is spread out in a shallow pan, dried at 100 degrees Cent. for 30 minutes, again mixed and transferred to a three-ounce bottle or can for the analysis.

Preparation of Sample at Consumer's End.

The aggregate sample is dried at 100 degrees Cent. and crushed before any quartering whatsoever, so that the entire mass will pass through a ½-inch mesh sieve. This is reduced by successive quartering and crushing until its weight is from four to eight ounces, and it will then all pass through a ⅛-inch mesh sieve. Or the entire sample is crushed so it will pass through a ⅛-inch mesh sieve, and then quartered as before until from four to eight ounces remain. And this final quantity is then further crushed with a chrome steel bucking board and muller and all passed through a 100-mesh sieve. A sufficient amount of this powder for all the needs of the analyst is placed in a small, air-tight container, dried for one hour at 100 degrees Cent. and when cool it constitutes the sample for analysis. A separate, larger portion of the same sample is retained for further needs.

(The author then gives in detail the corporation methods of analyzing ore.)

FINISHING METALS BY POLISHING

A General Discussion of the Considerations Governing the Art of Polishing — The Preparation of Wheels — Arrangement of Polishing Rooms

By Bradford H. Divine.[1]

When the editor of The Iron Trade Review asked the writer for an article on the polishing and finishing of metals, he replied that he would be pleased to furnish what information he could, if the editor would kindly tell him where to begin, for the subject presented so many different phases it was difficult to get a start.

Fifteen years' experience as a manufacturer of goods for this work has provided the writer with opportunities for observing practically every phase of polishing work in all branches of metal working, showing the state of the art to be very much undeveloped as compared to other branches of metal working, and almost an entire absence of any attempt to standardize working methods or tools, or to get at the fundamental principles of the business. This condition of affairs is probably largely due to the fact that the unattractive conditions of the polishing department do not appeal to men of ability, as most men of genius and ability who start as polishers or buffers graduate at the first opportunity to some more remunerative and congenial part of the business.

This condition is also aggravated by the position commonly taken by managers of metal working factories, that the polishing room is the dirty end of the business, and does not need the same care and attention as the machine shop or foundry. As a result the average polishing room is operating at an expense all out of proportion to other departments. Many a factory management which would discard a screw machine not a year old, in favor of a new type that will operate 15 per cent more cheaply, will continue to use polishing wheels that are all out of true, and with the efficiency decreased 25 to 50 per cent, rather than buy new wheels.

Typical Instances of Bad Practice.

As an illustration, the writer has recently been making a tour of all the plants operated by a company with a capital of millions, and in one of the polishing rooms the floor shook so much he was obliged to ask the gentleman with whom he was talking to move over near the wall, where conversation could be conducted without stuttering.

In another plant an entire new polishing room was being installed, and the manager pointed with pride to some new direct-connected electric polishing heads, with the motor casing open to the emery dust, there being no protection to the armature whatever. What a combination! An electric motor uncovered, working within 24 inches of two polishing wheels!

Another well known plant put the

[1]President Divine Bros. Co., Utica, N. Y.

Editor's Note—This article will be followed from time to time by several shorter ones, taking up particular phases of the art of polishing.

question "What do you know about glue?" They had been handling glue for polishing for thirty years, and had just found out that there might be some improvement in their methods. Questioning brought out the fact that their polishing wheels were lasting only about an hour and a half at a setting. The subject was carefully taken up and gone into, instructions given for necessary changes, with the result that the polishing wheels lasted a week, with one setting, for roughing work, and then were used four weeks more as finishing wheels. During this time the polishing foreman threatened to resign, several members of the concern said it was impossible, but the superintendent persevered, and eventually reduced the amount of glue and emery used to about 20 per cent of his previous consumption.

In contrast to such conditions was a plant in New England whose polishing rooms were a pleasure to enter, being clean, light, airy, the floor clean enough to sit on, although it had not been swept in several months, a perfect dust system, not a belt in sight, lathes heavy and strong, capable of high speeds and carrying wheels of any weight, shafting under the floor and the class of polishers noticeably above the average. The change has begun and manufacturers are gradually beginning to appreciate the necessity of bringing this department to a level with other departments. In one plant the conditions were so bad that the men were allowed to go outside the building every so often to clean their heads and throats of the dust and dirt.

Types of Polishing Wheels.

The general run of tools and equipments for polishing are woefully inefficient. The most common form of polishing wheel is the wooden block wheel covered with leather, which has no reason, based on merit, for its existence, apparently being used because it is cheap and easy to make. Its faults are many, but polishers took it for granted that the faults must be put up with as a matter of course. These wheels are subjected to constantly changing climatic and temperature conditions, used in hot dry rooms, then rolled in water to remove old emery and glue and often dried near steam pipes or boilers to set the glue quickly, resulting in warping, shrinking, swelling and cracking. They are nearly always out of true, so that the high spots only touch the work and only about 10 to 20 per cent of the emery and glue is consumed in working efficiency. Before the advent of improved wheels, a good working wood wheel was a prize, and was carefully guarded by the lucky owner. Leather was glued and pegged to the face of the wheel to secure a cushion, but the very effect desired of the leather was offset by the hard pegs, and especially at the joint of the leather. In large wheels it was difficult to secure a strip of leather uniform for its entire length, and the wheels would jump and vibrate at their work, making fine finishing very difficult.

Wheels or discs of bull neck leather were next used, the discs cemented together, to give a better cushion, and these were an improvement for some work, but wore down fast, and the flesh side of the leather, being softer than the grain side, the face of the wheel wore in ridges, necessitating frequent truing up, with a constantly decreasing efficiency as the diameter became smaller. There was also considerable trouble with the wheel being hard and soft in spots, owing to the hides being of different densities. Sheepskin was used which gave fairly good results on some work, but it broke down and became spongy. It was also very expensive.

Wheels made of heavy canvas discs cemented together have been largely used, but these have little cushion, owing to the large amount of glue necessary in building them up and which is made necessary on account of the rough surface of the canvas. This type of wheel soon became confined to the roughest class of work where a hard, tough wheel was required.

Solid felt wheels became very popular for fine finishing work, but had not body enough for any heavy work, and have remained in use for want of a good substitute.

Solid paper wheels have been largely used for hard roughing work, chiefly on account of their great cheapness, but these are little used at present.

Ideal Polishing Wheel.

Many attempts have been made to produce a wheel with a smooth running outer ring of polishing material with a flexible center, but none has been accepted by the trade. The ideal polishing wheel required a metal center for a close arbor fit, with a body of a material not affected by heat, moisture or other external conditions, and an outer ring of polishing cushion sufficiently resilient to be readily adaptable to various working conditions. Most attempts at such wheels have been "home made" affairs, but some have been successful and in plants where such wheels have been closely adapted to the work, the results have been astonishing.

It is not the purpose of this article to exploit any manufacturer's goods, but the writer has seen many instances where intelligent co-operation between makers of wheels and users of them has produced better finished work at 25 per cent of the former costs.

Selection of Glue for Polishing Wheels.

The polishing room troubles are not by any means confined to the wheels as many other elements must be considered. One of the chief factors in a metal polishing room is the quality and treatment of glue, which being largely of a chemical character naturally may not be as well understood by polishers as the more mechanical elements of the business.

In selecting a proper glue, the character of work should be considered, the number of emery and the way the wheel is to be run. The glue should be strong, but not brittle, toughness being the desired element, together with a certain amount of flexibility. For the coarser numbers of emery, a heavier bodied glue is required, while for the finer numbers, say, from No. 120 to Flour, a lighter, thinner glue works to better advantage. Work starting on coarse emery, below No. 46, and finishing up on No. 120 and finer should use separate glue pots for the different emeries, as putting the finer grades into a heavy, tough glue necessary for the coarse numbers does not give a good working surface to a wheel, since it is difficult to properly force fine emery into heavy glue. Under these conditions the emery tends to lay on the surface instead of penetrating and holding, and there results a very low efficiency of work. The reverse is equally true.

It makes little difference what style of polishing wheel is used, so far as the character of glue is concerned. A good glue will hold equally well on any style of wheel, with this exception, that glue will hang better to a woven fabric than to leather or other dense material. It will also hold much longer on the edge of practically any material than on the

flat side or surface, experience clearly demonstrating that a polishing wheel taking glue on the porous end grain (the leather or other material being on edge) holds emery several times as long as on the flat side of the material, where the glue cannot penetrate the pores. In canvas or other fabric wheels, glue holds much longer, where the fabric lays crosswise of the wheel on edge than on disc wheels. On most disc wheels, the pressure of work separates the disc, breaks up the emery surface, and tears off the glue.

Preparation of Glue.

Glue of any kind should be soaked in cold water several hours before being heated. Glue being animal matter is quickly decomposed by the heat if soaked in hot water, and its strength impaired. The time for soaking varies, ground glue requiring four hours, while cake, or flake glues require 12 to 14 hours. Any good glue should absorb its own weight of water, the object of soaking being to soak the water into the glue, not the glue into the water. In other words, glue of any certain grade will absorb a certain percentage of its own weight of water, and after being soaked, the glue can be diluted with more water to the required consistency for work. Glue soaked properly, with the proper proportion of water, should dissolve itself to the consistency of a pulp. If a glue soaks up too thin for coarse emery, it indicates that the body of the glue is too light and heavier glue must be used. A glue that works successfully in one locality often fails in another under apparently the same working conditions, due to varying atmospheric influences, such as dampness near the ocean, a lake, etc., or dryness in a high altitude, and also due to varying chemical elements in the water used, some places having water impregnated with lime, others with iron, sulphur, silicate of soda, or other ingredients liable to affect the composition of the glue. It is advisable, therefore, to always use distilled water for the glue, which is readily obtained from any boiler drip, and can easily be secured. The higher priced glues, as a rule, are the most economical, owing to the better class of stock in them, and the greater percentage of water they will take up, being better "washed" in the making and the undesirable elements taken out, making them "purer" and retaining a greater viscosity in proportion to their weight.

Glue should never be boiled. After being soaked up and heated, no further "melting" is necessary. It should be kept constantly at a temperature of 150 to 160 degrees Fahr., and this heat never should be exceeded. Boiling or simmering drives out the water, decomposing the solid matter in the form of a scum and gradually weakens the glue. The usual style of glue pot is made large in size to "hold enough to last awhile." A better arrangement is a number of small pots holding about one to two quarts each, arranging a sufficient number, so that some may be in use, while others are soaking, while a third set are being scalded and thoroughly cleaned, no scum being allowed to accumulate. With such an arrangement no glue should be used the second day, as the strength will be impaired about 50 per cent by standing over night, and thickened glue diluted never has its original strength.

Arrangement of Glue Room.

The gluing room should be a separate and especially arranged room, drafts from windows and doors being avoided, so that the thin layer of glue may not chill upon application to the wheels. The temperature should be uniform and about 72 degrees Fahr. A drying or warming oven should be provided to heat the wheels to about 120 degrees Fahr., in order that the glue may not chill upon striking them, and the emery should be in iron or metal troughs, heated by steam pipes to about 120 degrees. Emery boxes should be of sufficient length to permit a wheel to make a complete revolution, insuring an even distribution of emery.

The gluing room should be in charge of one man, who, if not experienced at the start, will soon become so, and the time saved by keeping polishers at productive work will, in any good sized plant, be sufficient to pay the glue man. "Everybody's business is nobody's business," and twenty or more polishers, each running to the glue pot, and fixing the glue to suit himself, usually puts the glue in a condition where no one knows its quality. No good shop allows a machinist to waste time standing around the emery wheel to grind a drill, and why should not the same system prevail in the polishing room as in the machine room, which requires that one man make a business of keeping the drills and tools in shape, and by practice become expert at it?

Selection of Emery.

The selection of emery or corundum of the proper quality and number is a matter of prime importance in securing good results. Emery varies greatly in character, and some makes which are excellent for roughing work in the coarser numbers, would be altogether too fast cutting in the finer numbers for fine finishing. Grease and oils are commonly used in finishing, but can be easily rendered ineffective if the emery is too sharp. The best finishing emeries are those where the mine product is uniform and of a certain softness, a mixture of the harder crystals tending to scratch as the softer crystals will crush in the polishing friction, leaving the harder crystals exposed.

Relation Between Design and Finish.

The proper place to begin good polishing is in the drafting room, for in the designing of any new article the finish can be made easy or difficult according to the design of the article. It is often easy to eliminate concave spaces where a polishing wheel cannot penetrate, and produce contours easily followed by the polishing wheel. A few cents saved in the forge shop or foundry is often the cause of dollars of expense in the finishing department, and often prevents the fine finish desired by the selling department.

The writer remembers being called into consultation with a concern starting a line of new goods which wished to place something "extra finely finished" on the market. A glance at the patterns showed that the cost of finishing alone would probably be more than what the article would sell for. It is not unusual to see changes made in designs, which save enough in the finishing to give a substantial advantage over a competitor.

Polishing the exterior of large surfaces is an easy matter, but it is the small concaves, corners and recesses that are expensive to finish, as it is difficult to get a narrow faced wheel to stand up under speed and get into such places. The wheel immediately "buckles" under the pressure necessary to force it into the corner, and the emery is quickly taken off. Such recesses usually require wheels of small diameter which work at a very great disadvantage.

Size of Wheels.

The efficiency and economy of work increase with the size of wheels and

the writer believes it a mistaken idea to use wheels of small diameter for finishing small pieces—the peripheral speed is the element to be considered and there seems to be little reason for using small diameter wheels on small work, unless, of course, the radius of the wheel is limited by the shape of the article. It takes practically no longer to remove a 12-inch wheel from the arbor, carry it to the glue room and set it up, than it would a 4-inch wheel, and the time saved is quite an item when applied to productive work.

Necessity of Standardization.

Lack of standardization of methods in the polishing trades has made it almost impossible to design automatic machines on account of the small sale possible for any one machine, and the metal manufacturer seems to give little credence to the possibilities of such machines. As an illustration, the writer while visiting one of the largest metal working plants in England, noticed the process of finishing bicycle sprockets for nickeling on which the design was very open, consisting of narrow strips from hub to rim in a fancy design, and the polisher was following each strip with the wheel, as well as around the narrow rim about ¼ inch wide. The foreman, in reply to a question, stated that more surface could not be covered at a time, because the sprocket wheel was not flat, but it would have been a very simple operation to strike up the wheel and flatten it so that, with a wheel properly designed for the job, the sprockets could have been jigged and the entire surface covered at one time at a cost of probably 25 per cent of the present cost.

A very advantageous idea, little used in the United States at present, is the use of highly polished strip or sheet steel for stamping work to eliminate the expense of handling the many small pieces of finished product in polishing, especially in flat work. Such a process should eliminate more than half the cost of polishing for the amount of marring or scratching that would occur in handling would be a comparatively small item.

Glazing of Knife Blades.

Many illustrations could be made of the astonishing results secured in the polishing world by the application of the same methods usually employed in other metal working branches and the cutlery trade serves as one very good one. The glazing of table knife blades had, until recently, been done by the old English methods, and mostly by English polishers brought over for the purpose, who also brought their own tools. The wheels used were large solid wood wheels of mahogany, cherry or walnut, from 4 to 6 feet diameter, the face cut in offset diagonal grooves. The work was applied directly on to the wheel with no intervening head of emery and glue, but with a dressing of emery cake prepared by the polishers, a large portion of whose time was consumed in dressing their wheels and keeping them in shape for work.

These men were experts in their line and guarded their processes closely, but recently an automatic machine for this glazing work has been placed on the market with remarkable success. The surface of a table knife blade is not flat, as appears at a casual look, but is somewhat convex, and the English system was successful owing to the expertness of the operator in passing the blade rapidly across the face of the wheel, the line of each pass blending with the line of each succeeding pass until the finished operation produced a mottled or satin finish with no lines visible which could be seen under the deposit of silver or nickel plate, either of which would magnify the slightest mark in the metal beneath. The automatic machine in question handles the blade with a compound lateral and rocking motion, permitting the wheel to follow the contour of the hand-forged blades, which are not straight or flat, and produces a perfect satin finish. One girl operator runs four such machines, yielding a greater production than four individual polishers by the old process, and producing fewer seconds. The cost of producing materials has been largely decreased, and by suitable adjustments any desired finish can be obtained. A certain style of knife formerly costing 9½ cents each to finish by the old hand processes, is now being produced at a cost of 1½ cents each.

Result of Fitting Wheels to Work.

Another illustration of the results of fitting wheels accurately to their work is shown in one operation on a certain style of knife on a leather covered wood wheel on which the operator could produce 335 to 350 pieces per day—while on the special wheel designed for that particular job he increased his production to 1,000 pieces per day.

The writer recalls one quite amusing experience where an American concern was offered a bonus to produce some tools with an extra high finish for a certain jobbing concern to market under their own brand. The proposition was gone over, and a process suggested which the polishing foreman of 26 years' experience pronounced impossible, but who worked it out under protest, with the result that a few weeks later the inspecting department refused to pass the goods on account of being *too highly finished,* the inspector naturally assuming that the high finish meant higher cost, whereas the cost had been greatly reduced. The foreman's protest soon became interest, and interest became enthusiasm, resulting in the end mentioned. The polisher of today is in much the same position as a locomotive engineer, paid to run his machine and not to interest himself in its manufacture, so that the improvement in polishing wheels has been left to outside parties, and has had little attention.

Polishing as a Substitute for Grinding.

Polishing is rapidly succeeding grinding on emery wheels and grindstones in many lines of trade, as wheels are now on the market which will hold the coarser numbers of emery effectively. and any class of work that can be done on a polishing wheel with emery glued to the face is produced much more cheaply than on solid wheels. Most of the work ground on solid wheels preparatory to polishing is left with spotted or flatted surfaces, requiring several polishing operations to reduce it to a state where a foundation for a finish can be secured. Forgings and castings are now taken direct to polishing wheels for roughing without being first ground, the resilient polishing wheel leaving a much smoother surface for subsequent operations. This same principle also holds good all through the polishing, the yielding form of wheel necessitating fewer operations, and leaving the work in better shape.

The greatest trouble with old style wheels has been that it was difficult to get just the right abrasive friction. If the wheel was too soft it left the work gray, or the wheel buckled and did not cut, while the average wheel hard enough to cut was too hard for good finishing. There is a certain point at which a polishing wheel works to best advantage, and unless this point is carefully determined, any one of several things happens. If the hardness of the wheel from speed, manner of dressing, etc., is greater than the metal being worked on, cutting will ensue which will either grind away the metal or simply polish it as the case may be, while if the wheel is too soft in speed, make up, etc., it

will simply crawl away from the metal, slide over it without cutting, and the efforts of the polisher to push the work into the wheel to make it cut, usually strip the emery from the wheel, destroying its efficiency and consuming more energy and glue than it should.

Weight on the face of a polishing wheel is an advantage, giving "abrasive friction," otherwise cutting power, and relieving the operator of the necessity of physical exertion in pressing work against the wheel, thereby increasing production. It also takes the strain from the arbor and the boxes of the lathe, decreases wear, saves power and is a direct economy all around.

Polishing Wheels vs. Straps.

Any form of polishing that can be done on wheels instead of straps is a distinct gain. The wheels will carry more energy and make it last longer. Straps have been largely used because of the difficulty in getting wheels sufficiently resilient, but the strap must follow the outlines of the work and is of little value in reducing work to a flat surface. Many manufacturers are still using straps for want of a satisfactory substitute. A case in point is a concern whose annual expense for straps is nearly sufficient to equip the entire room with a set of wheels which would last 15 years.

Shaped Polishing Wheels.

Better and cheaper work can often be done where a polishing wheel is shaped up to the work, but this has been difficult on account of the lack of style of wheel that could be formed up and keep its shape. This idea is particularly desirable in such work as trimming the flash from the bodies of forks and spoons where the outline must be carefully preserved. For this class of work a wheel must be somewhat flexible on the face, must hold a heavy head of emery, oftentimes half an inch thick, and must be strong enough to stand the stress of the weight of emery. Such wheels are usually covered with the paste process, i. e., emery put into the hot glue to the consistency of the paste, which is scraped or formed to a templet while still plastic on the wheel, and the work handled in jigs on a rest in front of the wheel.

Improvements Needed in Polishing Industry.

One of the reasons of the existing status of metal polishing seems to be the lack of interest taken in the work by the polishers themselves, and their lack of ingenuity in devising labor-saving or improved methods of working, also their unwillingness to try new methods. The polisher is one of the best paid of unskilled laborers, but his environment is not such as to stimulate him mentally, and his mind is more occupied with the execution of a given amount of work, than the ways and means of doing it. He looks with suspicion upon any new idea in his work or the introduction of a new device or tool, and any change has to be practically forced upon him. The relations between the polishers and the factory management seem to be very different from those of other departments, and the writer has very often met with open defiance in his visits to plants on polishing matters, which can only be attributed to ignorance or suspicion. One large manufacturer desired to adopt certain improved methods and started in, but came to a sudden halt, and in giving a reason said he knew he needed the process, but knew if he insisted he would have a strike on his hands, and was not situated so that he could stand it, and finally decided to continue the old way. Another manufacturer lost three of his best polishers, all of whom had been in his employ at least eight years, because he insisted on installing a new method which interfered in no way with the men or their wages—it was simply the superstition or suspicion of the inactive mind in regard to they knew not what.

Polishing Conditions in England.

Notwithstanding the generally unsatisfactory condition of metal polishing in America it is not to be compared to the general state of things in England and some other countries where tools and processes are notoriously crude.

English manufacturers frankly admit that Americans have beaten them in finishing goods, and it is not to be wondered at when conditions in both countries are compared. There are of course some English shops in good condition and producing good work, usually at three times what it ought to cost, but the average English factory is years behind the times. The writer has recently seen a polishing room in one of the largest English plants composed evidently of a number of small houses with doors knocked through the walls, ceilings about eight feet high, and a crowd of women as polishers and buffers, as black from their work as the dirtiest coal man. Polishing lathes and systems are crude and installed in old-fashioned rooms, dirty and dingy, causing an observer to wonder how good work can be expected under such conditions. The Englishman still sticks to his laborious grindstones while the American does his work on automatic emery grinders which turn out better work for less money, but the English grinder argues that he might burn his work on the fast moving emery grinder.

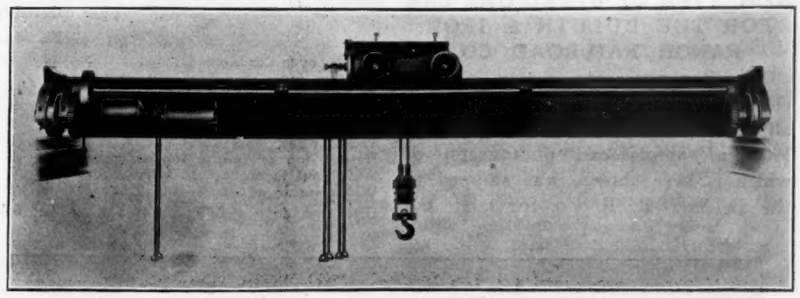
The "Butty" system still prevails largely in England, by which the factory owner rents space in the plant to a workman who finds all his own tools, which, owing to his lack of enterprise and capital, are the cheapest obtainable. In many cases the polisher works at home, the factory paying a certain rate for the completed work and having nothing to say about the way it is accomplished.

Up to a year ago the American manufacturer was too busy producing goods on back orders to have much time to experiment, but the relaxation of pressure the past few months has given him time to look things over and many of them have awakened to the condition of their polishing rooms and the writer has observed a more general desire to bring this department up to where it should be than at any time in his experience. The self satisfied manufacturer whose finishing department stands where it did 10, 20 or 30 years ago, has much to learn.

A NEW FLOOR CONTROLLED CRANE.

The accompanying illustration shows a new floor-controlled crane which has just been placed on the market by the Northern Engineering Works, Detroit. This crane is especially useful in moderate capacities from one to five tons, and with spans ranging from 12 to 40 feet. It can be made in either one, two or three-motor designs, and is adapted to the use of either direct or alternating current motors of any make.

It consists of a double girder bridge on which travels a trolley supporting a Northern "Junior" type electric hoist. The trolley is so arranged that it may be operated in either high, medium or low positions, thus readily adapting it to any height of ceiling, or to any established distance from rail to truss. The hoist is equipped with a mechanical brake and an electric brake, and has an automatic limit stop for the hoist block. The electric brake is so designed that it acts at once if current is interrupted. The mechanical brake not only assists in holding the load, but helps to control the lowering operation. The automatic limit stop does not depend upon the hoisting ropes for operation, but it is operated by a positive screw.



"NORTHERN" FLOOR CONTROLLED CRANE.

The hoisting mechanism is of the spur geared type, avoiding all bevel, worm or planetary gearing, and is entirely enclosed in an oil tight case. The controllers have ample resistance for giving a wide range of speed, thus making the crane well suited to delicate operations, as over foundry floors, or in riveting work, etc. The crane is usually controlled from the floor either by controller ropes or levers, but can be arranged for control either from a cab attached to the bridge, or from a fixed pulpit on the floor. This crane is especially well suited to the bays of large buildings, or to the main floors of smaller buildings.

AN IMPROVED FRICTION CLUTCH.

The accompanying illustrations show features of an improved friction clutch, which has been designed by A. L. Schultz, Chicago. The clutch is made in sizes from 6 inches up to 72 inches, transmitting, respectively, 3 to 500 horsepower at 100 revolutions per minute. The clutch may be used as a clutch coupling, connecting two shafts of the same or different diameters, or it may be attached to pulleys, sheaves, gears or sprockets, in which case the clutch is keyed to the driving shaft, the pulley or other driven member being placed on the driven shaft. The clutch illustrated in Fig. 1 is a 14-inch clutch transmitting 30 horsepower at 100 revolutions per minute.

The illustration, Fig. 2, shows the general construction of the device. The clutch has but few parts, none being intricate. Friction is furnished by two sets of wood blocks, which form a continuous circle on each side of the friction plate. On the front side of the plate the blocks are V-shaped to give a greater friction surface; also to line up the shafting, should it be out of line. The clutch is made either solid or split. When it is necessary to renew the friction blocks, it is not necessary to remove the clutch from the shafting. By releasing the cap screws, the operator is enabled to push the entire front of the clutch far enough away to afford convenient access to the friction plate, when the worn-out friction blocks can be quickly replaced.

The toggles attached to the sliding collar are of wrought iron, while those nearest the body of the clutch are steel castings. The clutch is thrown in and disengaged by a positive movement, and is firmly locked in either position. It is impossible for it to become disengaged by centrifugal force.

The Marshall & Huschart Machinery Co. has just added to its former holdings of 80 feet frontage on South Jefferson street, Chicago, the adjoining property at 72 Madison street. On this property will be erected what is intended to be a model machinery warehouse and salesroom. The building to be erected will be planned for a height of eight stories which will be occupied entirely by the owners, eventually. The end of the building facing on Jefferson street will be open to the light on three sides and will involve some entirely new ideas.

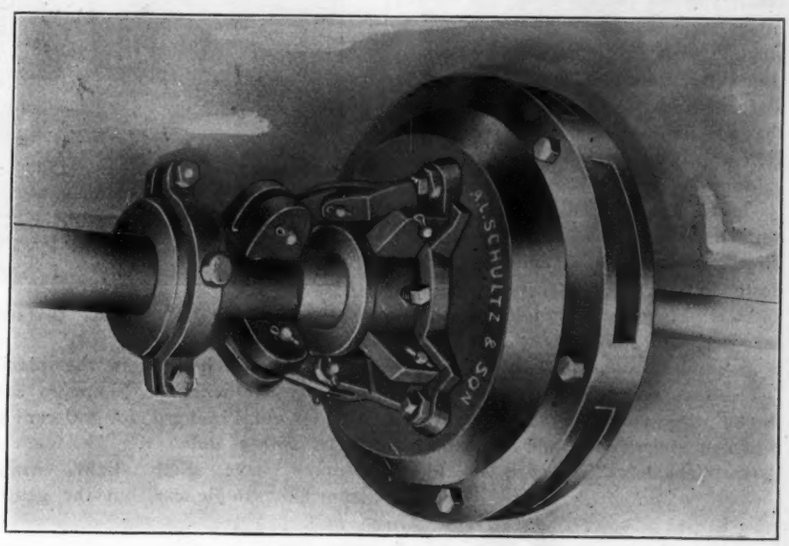


FIG 1—THE SCHULTZ FRICTION CLUTCH.

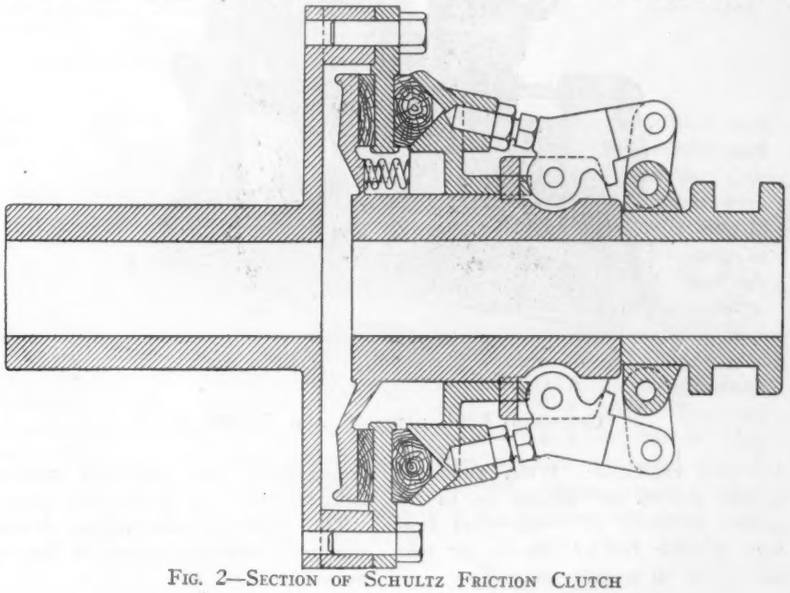


FIG. 2—SECTION OF SCHULTZ FRICTION CLUTCH

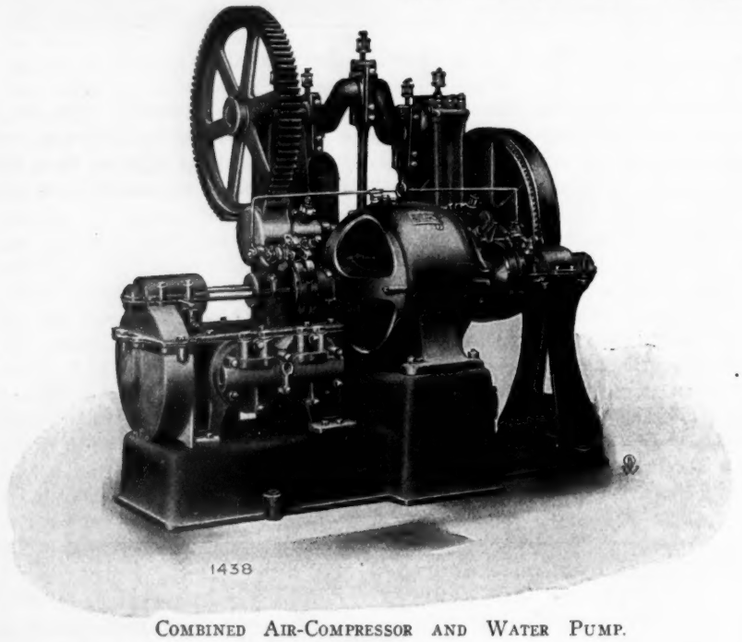
COMBINED AIR COMPRESSOR AND WATER PUMP UNITS.

The National Brake & Electric Co., Milwaukee, has placed on the market the combined air compressor and water pump units illustrated herewith, which are used in connection with automatic sprinkler systems and for hydraulic elevator service. A considerable saving in floor space and foundations is effected by their use.

The outfits consist of a "National" type "H" compressor and a water pump of standard make, mounted on a common sub-base together with a driving motor. The air compressor and water pump are operated independently of each other, and the change from one to the other is readily effected by throwing a single switch. The driving power is transmitted from the motor to both the air compressor and water pump through the medium of electric clutches which latter are so designed as to make failure of operation almost impossible.

The motors furnished in connection with these combined units are of the direct current shunt wound type and are designed and built especially for this service. They operate at low temperature and will stand heavy and continuous service.

These combined air compressor and water pump units are approved by the board of underwriters and recommended by their engineers. They are built in the following capacities: Water pumps 30 to 150 gallons per minute up to 150 pounds pressure; air compressors from 9 to 26 cubic feet of free air per minute up to 90 pounds pressure



COMBINED AIR-COMPRESSOR AND WATER PUMP.

NEW TYPE OF STEEL ORE CAR FOR THE DULUTH & IRON RANGE RAILROAD CO.

The Summers ore car is a self-clearing ore car that actually dumps all of the load. In the spring of 1908, a sample car, photograph of which is here shown, was shipped to the D. & I. R. R. Co. for trial; the result of which trial is the placing of an order with the Summers Steel Car Co., of Pittsburg, for 800 cars for early spring delivery. The cars as ordered have some slight changes from the sample car, but the general arrangement and operative mechanism remains practically the same.

The following dimensions, description and illustrations are of the cars as ordered:

Capacity	{ 50 tons { 820 cubic feet.	
	Ft.	Ins.
Length over dead wood	22	4½
Length face to face of coupler knuckles	24	0
Length center to center of trucks	15	0
Length inside of car body	17	5
Truck wheel base	5	0
Height, top of rail to top of car	9	5
Width out to out of car body	8	7
Width inside of car body	8	6
Discharge door opening...5 ft. 6 in. x 8 ft. 6 in.		

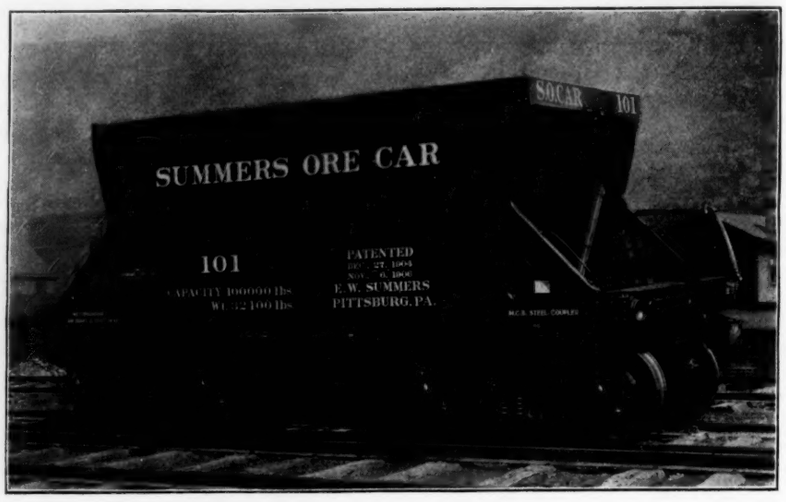


FIG. 1—THE SUMMERS ORE CAR.

Two doors, made of heavy pressed steel shapes, close the opening. The door opening extends over a portion of the inner truck wheels, the ends of the doors being flanged upward which permits of their opening downward without obstruction by the wheels.

The side and end sloping floor plates have an inclination of 50 degrees from the horizontal. The end floor also has its side portions turned up at an angle conforming with the side floor slope, with a result that the ore over the end floor plate is not changed in cross section, as it slides out, until it reaches the door opening. The doors open downward to such a degree that the resultant angle between the side and end sloping portion of the door is 50 degrees with the horizontal.

The top flanges of the side and end sheets slope inward and downward at an angle of 50 degrees with the horizontal.

With the doors opening so wide both transversely and longitudinally of the car as to break the bridging effect of the ore, the portion of the load over the doors immediately falls out when the doors are lowered. This is followed with that over the side and end floors which are of such an angle that the load slides off.

Each door is supported at its outer

edge by four heavy hinges, and at both ends by ¾-inch chains of the best quality. These chains are attached to, and wind around, a steel drum on a 2½-inch steel shaft, which shaft is held from rotation and is actuated by means of a worm gear. The worm gears are at the side of the car and have a common shaft actuating both worms in unison. A cross shaft, just back of the body bolster, extends from side to side of the car and is geared with miter gears to the worm shaft. This cross shaft provides a means of operating the doors from either side of the car by the use of a crank on the end of the shaft.

The worm gears hold the doors in any position from closed to full open, requiring no other latch mechanism. This enables the operator to open the doors slowly and prevent the whole load from dropping out at once, which might, by its impact, damage the dock.

The present equipment of the ore carrying roads in the northwest require the united effort of from six to 10 men to unload a car. This is accomplished by a number of men getting on top of the load and poking the ore out with iron bars, while others pound the car sides to jar the ore down. With the new car, one man can discharge the load and close the doors inside of two minutes, and is not required to get on the load at all; this will mean the difference between carrying on full operations during the rainy weather with the new cars, and only partial operation with the old ones, as men will not get up in the ore while it rains.

A peculiarity of the new car is the lack of center sills; the draft sills terminating at the door opening. The buffing and pulling shocks from the engine are transmitted to the sides of the car through horizontal side girders which are attached to the tops of the draft sills, and to the car sides, which sides have their lower portions formed into triangular shaped columns and which take the place of center sills.

The Steel Corporation has for several years been using cars of similar construction about its mills for handling refuse materials. Their excellent service and low maintenance cost gives them confidence in the durability of the new ore car. E. W. Summers, president of the Summers Steel Car Co., Pittsburg, is the designer and patentee of both of these cars.

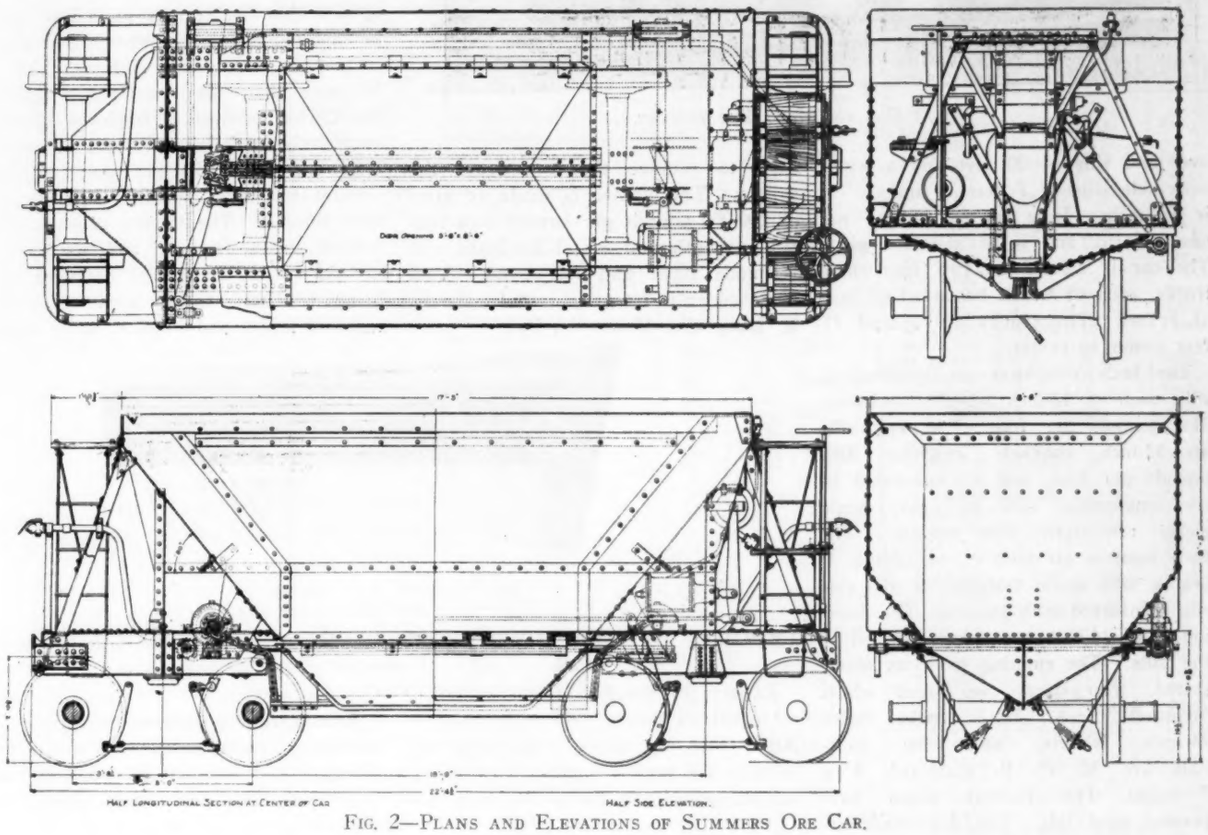


FIG. 2—PLANS AND ELEVATIONS OF SUMMERS ORE CAR.

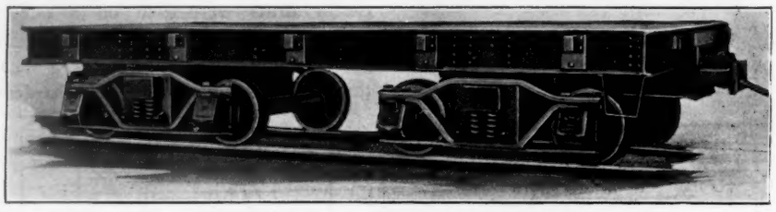
TESTS OF CELFOR DRILLS ON THE PACIFIC COAST.

Several interesting tests showing the efficiency of Celfor high speed drills, manufactured by the Celfor Tool Co., Chicago, have recently been made at some prominent Seattle machine shops. Celfor drills were used on a government repair job drilling ⅝-inch holes through protective deck plates 3 inches thick. The plates were case hardened and the average time of drilling each hole was one minute. In a Seattle plant manufacturing saw mill machinery four 1¼-inch holes 6⅛ inches deep were drilled in cast iron in 3 minutes and 56 seconds. In another shop ½-inch holes were drilled through pieces of high speed steel ½ inch thick, without lubricant, at the rate of one hole in 30 seconds.

Celfor drills are a radical departure from ordinary twist drills. They are made by twisting a flat bar of high speed steel which is afterward pointed and sharpened. Other results attained with their use, in Cincinnati shops, were noted in THE IRON TRADE REVIEW of Feb. 13, 1908.

AN INDUSTRIAL CAR FOR THE NAVY DEPARTMENT.

The accompanying illustration shows a special railroad platform car of 160,000 pounds capacity, of all-steel construction, which has just been completed by the Youngstown Car & Mfg. Co., Youngstown, O., for the United States government for service in one of the navy yards. The car has a total length



FLAT CAR FOR NAVY DEPARTMENT.

over end sills of 20 feet and a width over side sills of 7 feet 10 inches. It is 42 inches from top of rail to top of platform, and is of standard gage. The car is carried on two four-wheel trucks, each of which has a wheel base of 5 feet. The trucks are spaced 11 feet center to center.

The body comprises six longitudinal sills, each of 12-inch I-beams, weighing 31½ pounds per foot. The end sills are 12-inch channels weighing 20½ pounds per foot, and are connected to the longitudinal sills by heavy angle plates reinforced with gussets. The body bolsters are built up of 12-inch I-beams, with angle fasteners to the side sills reinforced with gussets. The flooring is of ½-inch steel plates riveted to the sills. The running gear, as above stated, comprises two four-wheel diamond arch bar trucks with 24-inch wheels, and the journals are M. C. B. standard, 4 x 7 inches. The journal boxes have pressed steel lids. The drawheads are of cast steel with twin spring draft gear. The face of the drawhead is curved and has an opening large enough to permit of coupling on curves of 50 feet radius. The approximate weight of the car is 27,500 pounds.

THE LANG TOOL HOLDER.

The accompanying illustrations show the Lang tool holder, which has been especially designed for turning locomotive tires. It is 2 x 3 x 16 inches, and is designed to have the rigidity, backing and radiating surface of a solid tool. In service it has taken a cut on a pair of 72-inch worn locomotive drivers of ½-inch feed by ⅝-inch depth, at a speed of from 10 to 15 feet per minute. The cutters used are 7 inches long and 2 inches across the flat. They are set in the holder at 10 degrees front and side clearance. These angles allow grinding on the face as well as on the top, as 7 degrees is the proper clearance and the face of the cutter need only be ground a short distance down from the top. Cutters can be used up to 3 inches in length. To remove the cutter for grinding or adjusting, it is unnecessary to remove the bolt from the holder. The holder is made of steel of 100,000 pounds per square inch tensile strength and is oil hardened. It is made right and left hand. This tool holder is manufactured by the G. R. Lang Co., Meadville, Pa.

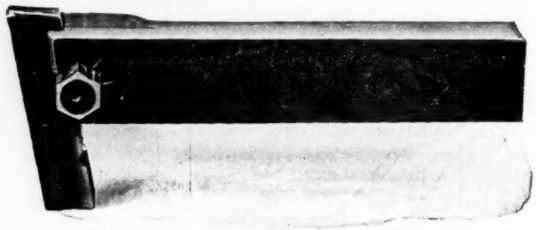


FIG. 1—LANG TOOL HOLDER.

IMPORTS OF GRAPHITE FROM CEYLON.

Exports of graphite from Ceylon to all countries during 1908 were close to 30,000 tons, or about one-fourth less than in the previous year. This falling off was principally due to the sharp curtailment in the demand from the United States, as European consumers bought well up to their usual amounts throughout the year. The improvement in the American steel industry late in the year is strikingly indicated by the statistics on importations from Ceylon. Through the first half of the year and, indeed, up until the last quarter, graphite users in this country had taken only about half the amount purchased the year previous; during the last quarter, however, importations increased at such a rapid rate that the total movement for the year was about 75 per cent of that of 1907. This sudden increase in demand, taken in connection with the fairly steady buying by European consumers through the entire year and with the fact that the Ceylon production is necessarily limited, had the effect of increasing the price level from 25 to 50 per cent. As no important additions are being made to the visible supply, those familiar with the industry are of the opinion that the average price level can be expected to run somewhat higher than in the past few years Although higher in price than the American graphite, the Ceylon product is employed almost exclusively in the manufacture of crucibles, and about 70 per cent of the amount annually imported is used for that purpose. The Ceylon deposits are located in the western and southwestern portions of the island, the workings being restricted to an area about 95 miles in length and some 40 miles wide. The United States is the largest importer of Ceylon graphite.

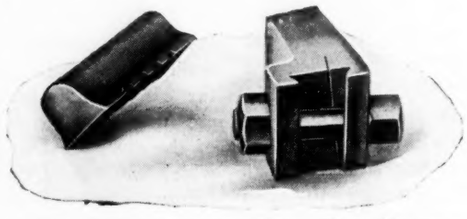


FIG. 2—PARTS OF THE LANG TOOL HOLDER.

Measuring Pig Iron.—For the information of foundrymen who desire to estimate the number of tons of pig iron they have on their yards by measurement, for the purpose of taking inventories, instead of weighing same, our inquiries justify us in saying that a computation based on one ton to each eight or nine cubic feet will result in a close approximation of the tonnage. Much naturally depends upon how the iron is piled, but these figures are based on experience in the usual method of stacking iron.

Stock Market Was Stationary.

In the week just closed the stock market showed no decided trend. The strong support that had been given to the various issues up to that time appeared to be lacking. Several temporarily unfavorable events tended to depress the market and about as many favorable signs kept it from going lower. The Russian loan issue was a complete success at Paris and was also successful at London and other centers. The Bank of England, it is expected, will now begin the accumulation of gold to place it on a par with other European money centers, even if it has to bid relatively high for the yellow metal.

The firmness of Monday's opening did not last, the close being weak and lower. Under the lead of Amalgamated Copper prices fell and all grades of copper metal were reduced ⅛c a pound. A better tone was noted Tuesday, prices closing higher. All grades of copper metal were again reduced ⅛c. Wednesday's market was the dullest of the year; Crucible Steel preferred broke to 55 on the announcement of the death of Chairman William G. Park. A rise in Steel common Thursday of two points pointed a recovery in the entire list, which closed firm. Further activity in steel stocks Friday was the feature of the market, preferred advancing to the highest ever quoted. The close of the market was heavy, the previous gain being wiped out. Saturday's market was dull and irregular.

The surplus reserve reported by clearing house banks is $31,942,275, compared with $37,064,500 the corresponding week last year, and $15,562,800 two years ago. Actual figures reported by clearing house banks showed loans decreased $309,100; deposits increased, $6.508,900, and surplus increased $5,146,450. The percentage of reserve was 27.40, an increase of 0.32. Non-member banks and trust companies reported loans increased $6,840,600; net deposits increased $12,128,100, and the percentage of reserve 32.0, an increase of 1.6.

Commercial failures in the United States were 318, compared with 305 the preceding week and 416 the corresponding week last year. Shares were sold to the number of 3,356,840, compared with 3,973,640 the preceding week and 3,847,200 the corresponding week last year. Bonds, exclusive of government bonds, were sold to the amount of $31,141,000, compared with $27,355,000 the preceding week and $15,777,000 the corresponding week last year.

Copper Stocks.

New York.—Amalgamated Copper closed 78½, a net loss of 2.

Boston.—Butte Coalition closed 24, a net loss of 1½; Calumet & Arizona closed 112½, a net loss of 3½; Calumet & Hecla closed 655, a net loss of 15; North Butte Mining closed 78⅜, a net loss of 2⅝; Quincy Mining closed 91, a net loss of 1.

Financial Notes.

The Pullman Co. declared the regular quarterly dividend of $2 a share, payable Feb. 15; the Cambria Steel Co. the regular semi-annual dividend of 1½ per cent, payable Feb. 15; the Flannery Bolt Co., the quarterly dividend of 5 per cent, payable Jan. 30; the Amalgamated Copper Co., the quarterly dividend of one-half of 1 per cent, being unchanged from the last previous quarter. The board of governors of the Columbus, O., stock exchange has approved the listing of the securities of the Ralston Steel Car Co. on the local exchange, the active issue being the preferred stock of the company. It has a capitalization of $1,000,000, of which $600,000 is common stock and $400,000 is preferred, of which $225,000 is outstanding. The remaining $175,000 will be offered to investors at par.

THE LEADING INDUSTRIAL SECURITIES.

	Closing Quo. Jan. 23	Changes in Week	Date 1908 Ann. M't'g.	Stock Outstanding	Basis	Dividend Last Declared	Dividend Date Last Div. Pay.
Allis-Chalmers	14½	+ ⅛	Sept. 3	$19,820,000		.....	.....
Allis-Chalmers pr	47½	+ ½		16,150,000	7 cum	1¾ Q.	Feb., 1904
American Can	8¾	.....	Feb. 3	41,233,300		.....	.....
Am. Can pr	73	+ ¾		41,233,300	7 cum	1¾ Q.	Jan., 1909
Am. Car & Foundry	49⅞	+1⅜	June 25	30,000,000		½ Q.	Jan., 1909
Am. Car & Fdy pr	109	+1		30,000,000	7 n. c.	1¾ Q.	Jan., 1909
American Loc	57	+ ¾	Oct. 20	25,000,000	5	1¼ Q.	Aug., 1908
American Loc. pr	111	.....		25,000,000	7 cum	1¾ Q.	Jan., 1909
American Ship	58⅜	.....	Oct. 14	7,600,000	4	1 Q.	June, 1908
American Ship pr	105	.....		7,900,000	7 n. c.	1¾ Q.	Oct., 1908
Am. Steel Foundries(new)	38½	+ ½	Oct. 6	15,810,000		.....	.....
Am. Steel Foundries, pr	47½	.....		14,247,400	6 cum	2½	Aug., 1904
Barney & Smith	40	.....	June 2	2,000,000	4	1 Q.	Sept., 1907
Barney & Smith, pr	110	.....		2,500,000	8 cum	2 Q.	June, 1908
Bethlehem Steel	25½	+1½	April 7	14,862,000		.....	.....
Bethlehem Steel, pr	52	+1		14,908,000	7 n. c.	¾ Q.	Feb., 1907
Cambria Steel	39	+ ¼	March 17	45,000,000*	6	1½ S. A.	Aug., 1908
Cambria Iron	46	.....		8,468,000*	4	2 S. A.	Sept., 1908
Chicago Pneumatic Tool	27¼	+1¼	Feb. 17	6,145,800	4	1 Q.	Oct., 1907
Colorado Fuel	41½	+ ½	Oct. 19	34,235,500		3½	April, 1902
Crucible Steel	7⅜	— ⅜	Oct. 21	24,578,400		.....	.....
Crucible Steel, pr	59	—1¼		24,436,500	7 cum	1 Q.	Dec., 1907
Empire Steel	6	.....	Feb. 26	1,254,770		.....	.....
Empire Steel, pr	47	.....		2,500,000	6 cum	3 S. A.	July, 1908
Fay & Egan	90	.....	Feb. 18	1,000,000	6	1¾ Q.	Nov., 1908
Fay & Egan, pr	100	.....		1,000,000	7 cum	1¾ Q.	Nov., 1908
General Electric	156	+ ½	May 12	65,167,000	8	2 Q.	Oct., 1908
Harbison-Walker	18½	.....	Jan. 20	18,000,000		½	Oct., 1907
Harbison-Walker, pr	82	+1		9,600,000	6 cum	1½ Q.	Oct., 1908
International Pump	39⅜	— ½	June 2	17,787,300		1	April, 1903
International Pump, pr	84¼	—1⅛		13,835,000	6 cum	1½ Q.	Nov., 1908
Lackawanna Steel	45	+2	March 11	34,971,400		.....	.....
Lake Sup. Corp	.....	.....	Oct. 7	40,000,000		.....	.....
New York Air Brake	88	+1¾	June 18	8,012,500	8	2 Q.	Oct., 1907
Niles-Bement-Pond	97	.....	Feb. 5	8,500,000	6	1½ Q.	Dec., 1908
Niles-Bement-Pond, pr	100	.....		2,000,000	6 cum	1½ Q.	Nov., 1908
Otis Elevator Co	47	+5	March 16	6,156,600		1½ S. A.	April, 1908
Otis Elevator Co., pr	93	.....		5,449,500	6 n. c.	1½ Q.	Jan., 1909
Penn. Steel	50	.....	May 11	10,750,000		.....	.....
Penn. Steel, pr	104	+ ¼		16,500,000	7 n. c.	3½ S. A.	Nov., 1908
Pittsburg Coal Co	12	—1	Feb. 10	28,853,400		.....	Nov., 1906
Pittsburg Coal Co., pr	47½	—1½		27,030,800	7 c.	1¾	April, 1905
Pressed Steel Car	42¾	+1¾	Feb. 19	12,500,000		3	Aug., 1904
Pressed Steel Car, pr	102¼	+ ¼		12,500,000	7 n. c.	1¾ Q.	Nov., 1908
Pullman	172	+2	Nov. 11	100,000,000	8	2 Q.	Nov., 1908
Railway Stl. Spring	47½	+1½	March 5	13,500,000	4	2 S. A.	Oct., 1908
Railway Stl. Spring, pr	100½	— ½		13,500,000	7 cum	1¾ Q.	Sept., 1908
Rep. Iron & Steel	25½	+ ½	Oct. 21	27,191,000		.....	.....
Rep. Iron & Steel, pr	87¼	+ ¾		20,416,900	7 cum	1¾ Q.	April, 1908
Sloss-Sheffield	78¼	+1	March 11	10,000,000	5	1 Q.	Dec., 1908
Sloss-Sheffield, pr	109½	.....		6,700,000	7 n. c.	1¾ Q.	Jan., 1909
U. S. Pipe & Fdy	29⅛	— ⅛	June 24	12,500,000	4	1 Q.	Dec., 1907
U. S. Pipe & Fdy., pr	75¼	— ½		12,500,000	7 n. c.	1¾ Q.	Sept., 1908
U. S. Steel	53⅞	+1⅛	April 20	508,302,500	2 n. c.	½ Q.	Dec., 1908
U. S. Steel, pr	114⅛	+ ⅛		360,281,100	7 cum	1¾ Q.	Nov., 1908
U. S. Steel 5s	104	+ ⅛		463,798,000	5	5 A.	.....
Va. Iron, Coal & Coke	61¼	+ ¼	Nov. 17	9,073,680		.....	.....
Westinghouse Elec	82¾	+2	June 24	23,933,200	10	2½ Q.	Oct., 1907
Westinghouse Air Brake	111½	+1½	Oct. 6	14,000,000*		2½ Q.	Jan., 1909

Par value of shares, $100, except those starred (*), $50.

NEWS FROM MANY INDUSTRIES

New Buyers:—

The Augustine Automobile Rotary Engine Co., Buffalo, with $1,000,000 capital stock has been chartered by C. B. Buckpitt, John Franey and George Kobei, of Buffalo.

Articles of incorporation have been filed by the Enid Foundry & Machine Shop, Enid, Tex., with $35,000 capital stock. The directors are H. C. Lang, J. A. Ham and J. W. Gettell, all of Enid.

The Massillon Bridge & Structural Co., Massillon, has been organized with $250,000 capital stock, and has been incorporated by H. A. Caxton, C. S. Davis, C. A. Gates, J. C. Corns and F. H. Snyder.

The Pittsburg Self-Stripping Mold Co., Dover, Del., with $100,000 capital stock, has been granted a charter, with the following incorporators: James H. Mering, Guy E. Campbell and Earl E. Kantz, Crafton, Pa.

The Churchward International Steel Co., capitalized at $500,000, has been incorporated by Charles S. Dodge and J. W. F. Throckmorton, 170 Broadway, and Frank H. Waggoner, 150 Nassau street, all of New York City.

The Northwestern Railway Supply Co., 159 LaSalle street, Chicago, to manufacture railway supplies and equipment with $5,000 capital stock, has been incorporated by William S. Barbee, Thomas S. Barbee and Charles R. Murray.

The Cropp Concrete Machinery Co., 140 Dearborn street, Chicago, has filed articles of incorporation to manufacture machinery and supplies, with a capital of $30,000. Andrew J. Cropp, A. J. Sherman and B. M. Cropp are the incorporators.

Herbert L. Schlesinger, Charles Ducas and Barnet J. Hollander, New York City, have been incorporated as Ducas & Co., New York City, to import and export machinery and mechanical apparatus, and deal in machinery and hardware, with $20,000 capital stock.

The Welch Forrester Co., New York City, manufacturer of motors, vehicles, engines and machinery, with $25,000 capital stock, has these incorporators: A. R. Welch, Pontiac, Mich.; Allen P. Hallett and Mark M. Solomon, 32 Nassau street, New York City.

The American Blower Co., Green Island, N. Y., to manufacture fans, blowers, pumps, ventilating apparatus, engines, motors and machinery, with a capital of $1,500,000. The incorporators are: Charles H. Gifford, Dedham, Mass.; Norman A. Robertson, 127 Water street, Brooklyn; Clayton W. Old, 141 Broadway; Thomas F. Wallace, 176 Broadway, both of New York City; and Eugene V. Myers, East Orange.

The Messenger & Parks Mfg. Co., Aurora, Ill., with $25,000 capital stock, has been granted a charter to manufacture and deal in sheet metal goods and roofings, etc. The incorporators are Frank C. Messenger, Vernon H. Parks and John P. Smith.

The Genesee Valley Mfg. Co., Mt. Morris, N. Y., has been chartered with $25,000 capital stock, to manufacture agricultural implements and machinery. George M. Schull, Charles W. Gamble and Frederick P. Mills, Mt. Morris, N. Y., are the incorporators.

The Central Steel & Wire Co., 103 Randolph street, Chicago, has been granted a certificate of incorporation to deal in steel, iron and other metals. The company is capitalized at $25,000 and has these incorporators: Oscar Hebel, Charles M. Haft and Harry J. Ganey.

The Cobb Boiler & Mfg. Co., Brooklyn, N. Y., has filed articles of incorporation to manufacture boiler and hot water heating apparatus, plumbing, etc., with $50,000 capital stock. The incorporators are H. M. Brown, F. W. Mills, E. J. Forhan, 154 Nassau street, New York City.

N. Frooks Engine Co., New York City, to repair and deal in hot air engines and pumping machinery, with $4,000 capital stock. The incorporators are: Nettie Frooks, 33 Pine street; Louis Singer, 224 East Broadway, and Abraham Mark, 72 Forsyth street, all of New York City.

Sieman's Magneto Co., New York City, manufacturer of electrical machinery, has applied for a charter, with $50,000 capital stock. The incorporators are: Frank Nebel, 278 East 136th street; Joseph Butner, 57 Frist avenue, and Sidney S. Meyers, 124 West Forty-seventh street, all of New York City.

The Bronx Iron & Steel Co., The Bronx, New York City, to deal in new and old iron and steel, has filed articles of incorporation with $10,000 capital stock. The incorporators are: Harry D. Bahr, 314 East 137th street; Charles D. Tyler, 786 East 149th street; Frank Welden, 4273 East 149th street, all of New York City.

A charter has been granted to M. Kleinfield Co., Brooklyn, to manufacture sheet metal cornices, skylights and roofing, with an authorized capital of $10,000. The incorporators are: Morris Kleinfield and Carrie Kleinfield, 188 Hinsdale street; Isador F. Greene, 84 Belmont avenue, all of Brooklyn.

The Sferlozza Fire Escape Co., New York City, has been incorporated to manufacture fire escapes and machinery, with a capital of $10,000. Those interested are: Alfonso Sferlozza, 442 Lorimer street, Brooklyn; Henry Neglia, 36 Morton street, and Alfonso D. Papalardo, 223 East Fifth street, both of New York City.

The Victor Packing & Supply Co., New York City, to manufacture steam packing, engine room and mill supplies, with $10,000 capital stock, has filed articles of incorporation. Those interested are: William H. Johnson, 58 Pearl street; William C. Herbert and Mark M. Solomon, 32 Nassau street, all of New York city.

New Construction.—

The International Nut Co., Niagara Falls, N. Y., is planning to erect a new building 25 x 80 feet.

The Sharon Steel Hoop Co. is making a number of important changes in its 12-inch mill at Sharon, Pa.

The Industrial Works, Bay City, Mich., is building a new foundry which will be finished in the spring.

The Oman & Johnson Co., Wilmar, Minn., is planning to erect a foundry to be run in conjunction with its machine shop.

The Rockford Machine & Shuttle Co., Rockford, Ill., will build a new plant in that city in the spring, but the exact location has not yet been decided.

The plant of the Vesper Safety Clevis & Malleable Iron Co., Vesper, Wis., which includes two main buildings, several offices and engine house, is nearing completion.

The work of improving stack No. 3 of the Shenango Furnace Co. at Shenango, Pa., has been begun. A skip hoist will be installed and the stack modernized.

The Wilkinson-Knupp Brass Co., Greenville, Pa., is planning to erect at East avenue and the Pittsburg, Bessemer & Lake Erie railroad two buildings, 60 x 100 feet.

The Campbell Iron Co., 617 North Second street, St. Louis, Mo., is receiving bids for a brick and stone foundry building, 123 x 133 feet, three stories, estimated to cost $50,000.

The Faeth Iron Works Co., Kan-

sas City, Mo., has instructed architects to draw plans for a brick and reinforced concrete building to be erected at Eighth and Santa Fe streets, to cost $20,000.

The Wyatt Mfg. Co., Salina, Kans., has purchased a tract of land adjoining the present foundry building and is having plans prepared for an addition that will cover all of the added ground.

The Norfolk & Western Railway Co. has let the contract for putting in concrete foundations at Williamson, W. Va., for railroad shops which will cost $200,000, and will employ several hundred hands when completed.

A building permit has been granted to the Merchants' Power Co., Memphis, Tenn., to erect an addition to its power plant to cost $20,000. The building will be of steel construction and will double the plant's capacity.

The Forth Worth Rolling Mill, Fort Worth, Tex., has resumed operating after a suspension due to the installation of several carloads of new machinery. The company plans next spring to install machinery for rolling cotton ties.

The William B. Scaife & Sons Co., Pittsburg, Pa., has received from Spang, Chalfant & Co. a contract for a large tonnage of structural steel work, in connection with the extensive additions which are being made to the Spang-Chalfant tube plant at Etna, Pa.

General Industrial.—

The Streator Metal Stamping Co., Streator, Ill., has certified its dissolution to state authorities.

The Benton Harbor Malleable Foundry Co., Benton Harbor, Mich., by vote of the board of directors, has increased its capital from $30,000 to $40,000, of which amount $30,000 is common stock.

The fly wheel of the engine at the plant of the Western Automatic Machine Screw Co., Elyria, O., broke shortly after quitting time, some days ago, and the flying pieces did considerable damage to the building.

The Barney & Smith Car Co., Dayton, O., recently was the successful bidder for a contract let at Norfolk, Va., calling for 15 passenger coaches and 200 steel cars of 50 tons capacity.

The West End Iron Co. & Chain Works, Lebanon, Pa., at its annual meeting elected these officers: President, C. Shenk; vice president and general manager, Eli Atwood; secretary and treasurer, Abram Hess.

A branch of the A. E. Shorthill Co., Marshalltown, Ia., structural iron and bridge material dealers, will be opened in Omaha, and will be conducted by Russell S. Harris and Thad. L. Travis.

The Eagle Iron Works, Corry, Pa., has been reorganized under the name of the United States Brake Shoe Co., of which Joseph Ressler has been named manager, and J. F. Austin, secretary and treasurer. The plant may be removed to Erie.

These officers were elected at the annual meeting of the stockholders of the Lake Erie Limestone Co., at Pittsburg: President, Frank Hitchcock; vice president, T. W. Guthrie; treasurer and general manager, H. W. Heedy; and clerk, G. W. Van Vleet.

The American Fence & Iron Works Co., Covington, Ky., which was recently incorporated with $20,000 capital by Joseph P. Stevens, Christian C. Weber, Edward A. Weber, Frank L. Branson, D. H. Stevens and B. H. Stevens, will make iron fences and other like articles.

The Sivyer Steel Co., Milwaukee, which was recently incorporated with a capital of $25,000, by Frederick L. Sivyer, Donald Fraser and William C. Frye, plans to erect a plant near one of the Milwaukee foundries and put in two furnaces for the manufacture of crucible steel.

The Iowa Ditching Machine Co., Stockport, Ia., at its annual meeting elected the following officers: President, Dr. L. Morris; vice president, E. T. Harlan; secretary, O. A. Collins; treasurer, J. H. McCarthy. In addition to the officers, the following directors were named: J. A. J. Alvey, M. L. Poulter and M. J. Munson.

The Dayton Globe Iron Works Co., Dayton, O., at the annual meeting heard gratifying reports relative to business in the year just ended, and chose these officers: President and treasurer, R. R. Dickey Jr.; vice president, C. P. Folsom; secretary, C. E. Mentell; assistant secretary, F. W. Huber.

J. E. Bicknell has been appointed receiver of the Findlay Axe & Tool Co., Findlay, O., upon the application of Mrs. Bicknell, of Cleveland. The assets of the company amount to about $175,000 and the liabilities to about $50,000, the greater portion of which are unsatisfied bonds.

Franklin Alter was re-elected president of the American Tool Works Co., Cincinnati, at the recent annual meeting; vice president, J. B. Doan; secretary, Robert Alter; and treasurer, Harry Luers. On the board of directors the above named officers and A. B. Voorheis were re-elected, and M. G. Fitzpatrick was chosen to succeed the late H. H. Peck.

Joseph E. Sherfey is one of the active promoters in the effort to build a rolling mill at Brazil, Ind. He is vice president of the Brazil Factory Promoting Club, and owned considerable stock in the Central Iron & Steel Co. with a mill at Brazil, which was sold to the Republic Iron & Steel Co.

Re-election of these officers and directors took place at the annual meeting of the Andrews & Hitchcock Iron Co., Youngstown, O., recently: President, Frank Hitchcock; vice president and general manager, W. J. Hitchcock; secretary and treasurer, H. W. Heedy; Mrs. Louisa Andrews, Myron I. Arms and John Shaw.

The Heller Bros. Co., Newark, N. J., farriers' tools, advises respecting its recent fire that a small storehouse at its steel works was damaged, but is now being rebuilt.

The Talladega Foundry & Machine Co., Talladega, Ala., advises that it has placed its plant in operation, and is ready to bid on any kind of castings up to four tons. Also all kinds of boiler, blacksmithing, pattern or machine work, as well as repair work.

The Fall River Foundry & Machine Co., Fall River, Mass., advises that it has been a copartnership since 1902, and has just recently incorporated the company. At this time, the company does not intend to increase its plant, which is equipped for doing a general line of mill work.

J. T. Loyd was elected president of the Fox-Harris Machine & Supply Co., Pine Bluff, Ark., at its recent annual meeting. The other officers are: Vice president, H. C. Fox; secretary-treasurer, W. S. Harris; manager, George P. Darby. A dividend of 10 per cent was declared.

Stockholders of the Valley Foundry & Machine Works, Fresno, Cal., chose the following officers and directors at the recent annual meeting: President and general manager, Ben Hunt; vice president and treasurer, J. L. Reeder; treasurer, William Davidson; J. C. Hunt, Louis Swenson. Satisfactory reports for the year just closed were read.

At the annual meeting of the stockholders of the Consolidated Wagon & Machine Co., Salt Lake City, Utah, to be held Feb. 8, the capital stock will be increased from $1,500,000 to $2,500,000 in order to permit of the raising of additional capital to care for the needs of the business. The present capitalization of the company con-

sists of $310,000 of common stock and the rest of preferred.

At the annual meeting of the stockholders of the Campbell Mfg. Co., Gadsden, Ala., the report on the year's business was received and these officers elected: President, Otto Agricola; vice president, A. Haggedorn; secretary, G. W. Campbell; treasurer, J. S. Payden. The directors include the above officers and Ferd. Frank, T. S. Kyle and W. A. Bellenger.

The Penn Steel Casting Co., Chester, Pa., has received two orders from the Baldwin Locomotive Co., one calling for 140 and the other for 110 engine frames. The company has just shipped a large hydraulic cylinder to the Morgan Engineering Co., Alliance, O., which was in three sections, each weighing in the neighborhood of 16 tons, and the bed plate being 12 x 18 feet and 18 inches in depth.

The Petroleum Iron Co., Sharon, Pa., after declaring the regular and special dividend, elected the following officers: J. C. Cullinan, Houston, Tex., president; J. L. Considine, vice president; A. W. Krouse, secretary and treasurer; who, with C. J. McDowell and P. A. Little, of Sharon, and H. S. Scafford, of Pittsburg, constitute the board of directors.

The annual meeting of the Escanaba River Land & Iron Co., Marquette, Mich., resulted in the election of the following officers: President, Charles Johnson; vice president, George J. Maas; secretary and treasurer, Joseph H. Winter, who together with J. E. Suess, Mrs. S. P. Klein, Mrs. Edward Lobb and Nathaniel R. Lobb compose the board of directors. The company owns the tract on which is located the Austin mine, one of the Cleveland-Cliffs Iron Co.'s properties.

Trade Notes:—

The Youngstown Car Mfg. Co., Youngstown, O., builder of industrial cars for iron and steel mills, recently re-located its Chicago office at 1603 Fisher building. The Chicago office is in charge of Charles B. Owens, formerly with the American Car & Foundry Co.

Schuchardt & Schutte announce that on Jan. 15 they removed their New York office and warerooms from 136 Liberty street to the West street building, 90 West street.

Hickman, Williams & Co., announce that on Feb. 1 they will establish offices in New York, Philadelphia and Boston, with the eastern headquarters in the Hudson Terminal building, 30 Church street, New York City. The offices of N. S. Bartlett & Co., 120 State street, Boston, and in the Harrison building, Philadelphia, will be occupied by Hickman, Williams & Co., and the eastern offices will be under the direction of H. O. Henshaw, who will retire as a member of the firm of Bartlett & Co., Feb. 1 and at the same time become a member of Hickman, Williams & Co. In addition to the various brands of pig iron, alloys and coke for which they are now selling agent, they will continue to handle all brands of pig iron, alloys, coke, etc., that N. S. Bartlett & Co. have handled in the past.

Fires:—

The shops of the Sideweight Horse Shoe Co, Hartford, Conn., was badly damaged Jan. 15, the loss being placed at $8,000.

The loss on Knowlton's Foundry, Leon, Ia., damaged Jan. 14, has been placed at $8,000.

TRADE PUBLICATIONS.

AIR COMPRESSORS.—Catalog 100 has just been issued by the Thos. H. Dallett Co., Philadelphia, and describes a new line of air compressors, which are built in capacities ranging from 79 to 1,060 cubic feet of free air per minute. These are made in a number of different types, the line comprising straight line, belt-driven, straight line belt-driven, straight line steam driven, duplex belt-driven, duplex steam driven, compound belt-driven, duplex steam driven and compound steam driven compressors. The catalog gives tables of sizes, capacities, etc., and describes the construction details.

STEAM TRAPS.—Catalog No. 247 which is being distributed by the American Blower Co. describes "Detroit" steam traps. These are built in a number of different types, comprising return traps, separating traps, automatic return traps, etc. Tables of sizes and capacities, constructional features, illustrations of typical applications and instructions for installation are incorporated in the catalog.

FORGE BLOWERS.—The "ABC" electric forge blower built in three sizes is described in folder 242 issued by the American Blower Co.

STEAM ENGINES.—Variable speed steam engines are described in bulletin 244 issued by the American Blower Co., Detroit. These engines are built in pairs coupled toegther with a speed changing device, which will vary the speed of the governor independent of the engine speed and maintain a uniform number of revolutions at any fixed speed.

MOLDING MACHINES.—Multiple molding is the subject of a catalog issued by the Rathbone Molding Machine Co., Detroit. A detailed description of the art of multiple molding is given, together with a discussion of the operation of the multiple molding machine. The questions of alignment, pattern draft, etc., are taken up, together with the subject of mounting a pattern. The catalog contains a great deal of valuable information on the subject to which it is devoted.

MILLING MACHINES.—The Carter & Hakes Machine Co., Winsted, Conn., is distributing catalog No. 1, describing Lincoln and hand milling machines, which are built in a number of varying sizes. The catalog comprises 15 8 x 10 pages printed in two colors and attractively gotten up.

MOTOR GENERATOR SETS.—Bulletin 4633 issued by the General Electric Co., Schenectady, is devoted to motor generator sets. Sets ranging in capacity from 0.2 kilowatt to 1,500 kilowatts, are described and illustrated, as are frequency changes. The bulletin contains tables of weights and dimensions of the various sets.

ARC LIGHTING SYSTEM.—The series alternating system of arc lighting is described in bulletin 4633 issued by the General Electric Co., Schenectady. The bulletin contains a detailed description of the constant current transformer panels, lamps and other apparatus used in this system, together with connection diagrams.

ELECTRICAL INSTRUMENTS. — Direct current portable electrical testing instruments are described in bulletin 4630 of the General Electric Co., Schenectady, this line of instruments comprising ammeters, voltmeters, milli-ammeters and milli-voltmeters.

MERCURY ARC RECTIFIERS.—Bulletin 4628 of the General Electric Co., Schenectady, describes a mercury arc rectifier, which is an improvement over the older design of this company. This rectifier will operate at any frequency from 60 to 140 cycles, although it is designed primarily for 60 cycles. It will operate on either 110 or 220-volt alternating current circuits. The bulletin describes and illustrates the standard commercial rectifier set and the accessories. It also contains connection diagrams and other data.

AIR PUMPS.—The Wheeler Condenser & Engineering Co., Carteret, N. J., has issued bulletin 103 on the Wheeler-Edwards patent air pump. This is an air pump of the dry type and designed to maintain extremely high vacua. The bulletin, which comprises 32 8 x 10-inch pages, describes completely the construction and action of the pump, and presents a number of comments on it by eminent engineers, some of which are highly technical in character. It also comprises some useful tables on properties of steam and air.

OXY-ACETYLENE WELDING APPARATUS.—The Linde Air Products Co., Buffalo, is distributing a 35-page catalog concerning apparatus for oxy-acetylene welding, including blow pipes, pressure regulators, oxygen production apparatus, etc. This company has secured the rights to Dr. Linde's system of producing oxygen from liquid air, which finds extensive use in autogenous welding. The catalog describes this system of welding, gives instructions for using the blowpipe, presents notes on welding and illustrates samples of work.

FANS.—The B. F. Sturtevant Co., Hyde Park, Mass., has issued bulletin No. 158, devoted to the Sturtevant multivane fan for all services, such as hot blast apparatus, heating, drying, mine ventilating, etc. Illustrations of different types of fan are presented, together with descriptive matter.

INDUSTRIAL RAILWAY.—Catalog No. 1075, issued by the Atlas Car & Mfg. Co., Cleveland, describes industrial railway equipment, including flat cars, dump cars, ladle cars, brakes, switches, turntables, etc.

STEAM ENGINES.—The Ridgway Dynamo & Engine Co., Ridgway, Pa., has issued bulletins 19 and 20, describing, respectively, the Ridgway single valve center crank engine and the single valve side crank engine. These bulletins present details of construction of both types, together with tables of sizes. They are built in capacities ranging from 30 to 750 horsepower.

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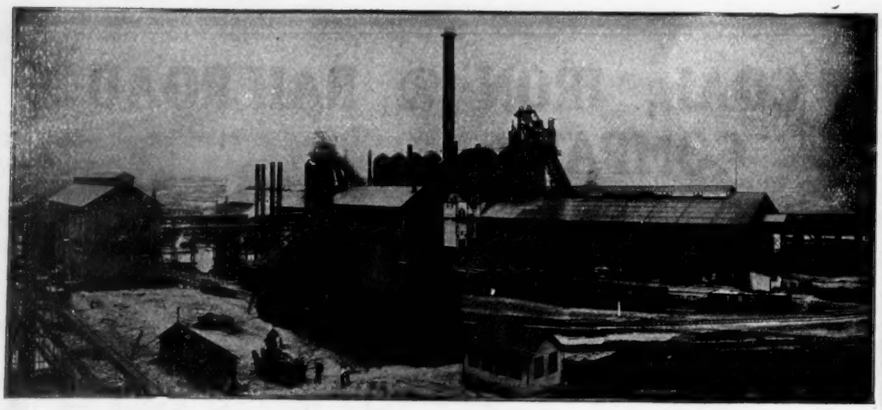

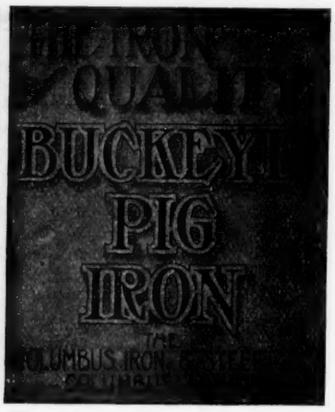

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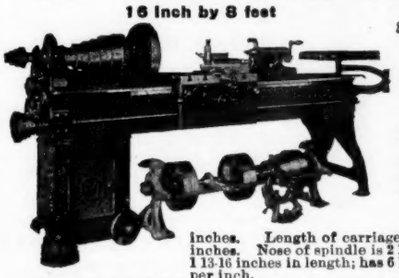

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In any quantity, metal or fibre. Dies, Stamping and Screw Machine Work. Quadriga Mfg. Co., 18 So. Canal St., Chicago, Ill. p.

FOR SALE—MISCELLANEOUS.

FOR SALE CHEAP. LATHE-BED PIPE machine, brand new. The Loew Mfg. Co., Cleveland, O.

FOR SALE, BALANCE WHEEL 70" diameter, 14" face, 6 7/8" bore, rim 2½" thick, weight 2,800. Cast iron pulley, 70" diam., 14" face, 6 7/8" bore, rim 1" thick, weight 1,500. Sturgis Machine Co., Sturgis, Mich. p.

PATENT FOR SALE (RECENT ISSUE) pertaining to machine shop equipment, just coming into general use. Good seller, good profits; reason for selling, have other patent better adapted to our equipment and selling to different class of trade. Patterns and jigs go with patent. Address Titus Machine Works, Marion, O. p.

FOR SALE, 90 H. P. ATLAS BOILER; 60 inches diameter; 60 tubes, 3½ inches; length, 14 ft.; shell 5/16 thick; dome 30 x 30, with cast fronts and grate. Good for 75 lbs. pressure. First-class condition. $250.00. Also 200 H. P. Frick upright engine, 18 x 18 cylinder, 180 R. P. M., no flywheel. The Kansas City Bolt & Nut Co., Kansas City, Mo. p.

ONE ESPEN-LUCAS PLAIN SLAB MILLing machine for sale, diameter of spindle 4 in.; width of table 18 in.; length of feed to table 48 in. Will admit work 22 in. wide. Has variable automatic feed ½ in. to 7 in. per minute. Screw for adjusting spindle head has micrometer adjustment. Condition good as new. Will be sold at a bargain. Graham Nut Co., Pittsburg, Pa.

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FOR SALE. THREE TWO-SPINDLE 1-inch Landis bolt cutters, complete with countershafts, dies, pumps, etc. All in first-class condition. Price low. Graham Nut Co., Pittsburg, Pa.

FOR SALE.—A. B. C. EXHAUST FAN, 35", new, never used. The Bashlin Company, Warren, Pa. p

TWO RUNS OF BUHRS; MUNSON'S patent; 60 in. diameter; both under runners and iron frames; also, tightening pulleys for same; also, cogwheels and shafting; all are in good order and condition. Geo. W. Smith, Dayton, O. R. F. D. No. 5.

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